The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

Vol. XIV GRAND RAPIDS, MICHIGAN, MAY, 1915 No. 5

Original Articles

THE SEPTIC FACTOR IN THE THREE PLAGUES.*

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The three plagues—syphilis, tuberculosis and cancer—are the most widespread affecting the human race. In each of these sepsis plays a most important part. In syphilis it is so important a factor that, unless it exists, we may not recognize the process of syphilis. In tuberculosis it is almost an axiom that people do not die from tuberculosis, but from associated sepsis. In cancer, sepsis renders many cases inoperable; it is the most important factor in the production of the painful and offensive results of advanced disease and the usual cause of death following radical operations.

SYPHILIS.

"Unto the second and third generation"—how fitly this old quotation describes syphilis, and in this respect it is quite unlike tuberculosis and cancer neither of which is transmissable to the unborn child. Discovery of the spirochaeta pallida the cause of syphilis, and the newer methods of staining it have placed in our hands a great weapon of defense against this plague. Aided by the Wassermann reaction and salvarsan, we are for the first time in a position to combat the disease effectively.

It is believed by many syphilographers that syphilis in this generation is becoming milder as compared with the disease in former generations. Two reasons have been advanced for this: one, that the people are gradually developing an immunity by virtue of hereditary and acquired protective agencies based on the general theory of the survival of the fittest, and, second, that syphilis is much better treated now than it used to be. But how can we account for the high percentage of people with terminal changes in the central nervous system—locomotor ataxia tabes and the general paralysis of the insane: Certainly there is no diminution of these syphilitic manifestations, making all due allowance for better diagnosis. On the contrary, they appear to be on the increase; the clinical frequency of locomotor ataxia and general paralysis of the insane is appalling.

The hardness in the base of the typical chancre (the earliest indication of the presence of syphilis) and the accentuation of secondary lesions are not due to the spirochaete alone, but to complicating sepsis. (Corner). The people of all civilized countries are far cleaner now than they used to be and through improved hygienic knowledge take better care of small sores and abrasions than was formerly the custom. The chancre, therefore, is apt to be treated with strict cleanliness and often by antiseptic substances. So that it may not assume that typical hardness in the base which is due to sepsis. The failure to develop this characteristic because of the cleanliness and care of the individual may cause a failure to diagnose syphilis. For this same reason the secondary symptoms may be exceedingly mild and thus the patient may acquire the disease and pass through the primary and secondary stages without detection. The tendency of the infection is to travel along the nerve sheaths into the central nervous system and the first symptom of syphilis known to the patient may be premonitory of tabes or paresis—terminal conditions for which the resources of our art have comparatively little remedy.

It is a great misfortune that syphilis is considered only a venereal disease, therefore carrying a stigma with it. As a matter of fact, a high percentage of the patients that we see with syphilis have had an extra-genital source of infection. Lips, fingers, and abrasions at different parts of the body have been the means of communication. The failure to elicit a venereal history has frequently thrown the diagnostician off his guard.

*Founders Day Address, University of Michigan, Ann Arbor, Mich., February 22, 1915.

We see a few instances every year of surgeons who have infected their fingers with syphilis during operations on syphilitic patients. The chancre often does not develop the typical characteristics because of the care the surgeon naturally gives to minor abrasions and as his personal hygiene is good, he may slip through the secondary stage with scarcely a suspicion. Then come visceral lesions of various organs or lesions of the central nervous system. Occasionally, however, exactly the opposite condition prevails. The surgeon acquires syphilis and virulent septic infection at the same time and here the syphilitic infection is masked by the septic involvement which, however, does not prevent the eventual development of syphilis, which remains grafted on the individual after the septic manifestations have disappeared. If these accidents happen to the surgeon unrecognized, how much more liable is the ordinary individual to the same misfortune.

The importance of early diagnosis of chancre cannot be over estimated. Systemic infection does not take place until from five to fifteen days after the development of the chancre. At this time the disease is local and by proper treatment can be cured. After the Wassermann reaction has developed the great opportunity has passed for syphilis has become systemic. Prolonged treatment may or may not eventuate in a cure. This brings up the very important consideration that the spirochaeta exist in the chancre and can there be readily secured for microscopic examination. *The diagnosis of chancre should depend on finding the spirochaete; not on the induration of the base.* Every suspicious infection should, therefore, be subjected to careful bacteriologic investigation, otherwise the patient may suffer irreparable damage.

Hale White gives the following table of the relation of syphilis to the general death rate, showing that even in those cases which have been subjected to two year's treatment the death rate by decades is nearly twice as high, to say nothing of the miseries and horrors of a loathsome disease:

Class 1. Syphilis certain. thoroughly treated; two year's continuous treatment and one year's freedom from symptoms.

	Actual Deaths	Expected Deaths	Ratio
Certain syphilis between 3 and 5 years before	13	9.32	139%
Between 5 and 10 years before	34	19.56	174%
More than 10 years before	53	24.42	217%

Class 2. Not thoroughly treated or no details given.

	Actual Deaths	Expected Deaths	Ratio
Certain syphilis between 2 and 5 years	44	15.52	284%
Between 5 and 10 years	54	25.52	212%
More than 10 years	76	59.09	129%

Class 3. Doubtful syphilis.

More than 2 years	67	48.71	138%

It is a curious fact that terminal syphilis in man affects the nervous system more frequently than in woman and often pursues a more malignant course. In woman, as a satanic equivalent, syphilis is the great abortionist and carries dreadful misfortune to the children she may bear even unto the second and third generations. In certain situations syphilis leads to chronic irritation and cancer, as in the keratosis linguae preceding cancer of the mouth (Blair), especially in smokers. It is well known that the tuberculous bear syphilis badly, while the syphilitic are prone to tuberculosis.

There is much food for reflection in the septic factor in syphilis. Those acquiring the disease accidentally and extra-genitally will probably at the present time not have the chancre recognized and the cleaner the person affected the less chance that it will be recognized in the secondary stage. Those venereally affected and dirty have the best chance of early detection and prevention of systemic infection, and, if systemic infection does take place, by reason of the virulence of the secondary stage, to have it detected at this time and to secure thorough and adequate treatment.

It will take the profession a long time to rid itself of impressions of the disease which have been inherited from experience with the vicious and dirty in which the prominence of the symptoms were due less to syphilis than to associated sepsis. Corner says: "At hospitals students are taught to recognize syphilis from the examples of septic syphilis brought to their notice by their teachers. The septic factor in syphilis exaggerates its characters and furnishes some new ones of so great importance that the great text books have taken such septic characteristics as illustrative of the syphilitic nature of the lesion." As a corollary to this, Corner further says: "There are few diseases which, if recognized early, are more studiously treated and more uniformly yield good results from treatment than syphilis," and again, "Syphilis which is not recognized, and not treated, patients may transmit both to this and future generations. They then appear with nervous

disease, such as locomotor ataxia, general paralysis of the insane, and other forms of insanity and there is no history of syphilis." I would emphasize Corner's final remark that "if the patient belongs to the better educated classes he may pay a penalty for his cleanliness in the disease not being diagnosed and the virtue which he undoubtedly has is not rewarded properly."

In abdominal surgery we unexpectedly meet with visceral syphilis, most commonly of the liver or stomach, and most of these cases are diagnosed as cancer. For this reason, a piece of tissue should be secured for microscopic examination of the frozen section and, while this may not definitely determine that it is syphilis, it at least will show that it is not cancer.

TREATMENT OF SYPHILIS.

In regard to treatment: In the army, syphilis amongst the soldiers has been very largely prevented by the use of a 50 per cent. calomel ointment (¼ lanoline and ¾ vaseline or lard), which was first used in the French army. It was found experimentally and clinically by Metchnikoff that if applied within five or six hours after infection prevention was absolute. Suspicious sores should be subjected to examination for the spirochaete and if present with a negative Wassermann reaction the disease should be treated as a local one by the direct application of salvarsan emulsion or calomel ointment and one or two preventive salvarsan injections made. It must be borne in mind in the treatment of lues as a localized infection that some cases become constitutional before the disappearance of the primary sore. For this reason, a Wassermann test should be made at intervals and the patient watched for signs of constitutional infection.

Many instances of the failure of salvarsan to cure syphilis are recorded with eventual cure by means of mercury, especially mercurial inunction. As a matter of fact, arsenic in one form or another has at various times in the history of medicine been heralded as a cure for syphilis but always has it eventually been shown to be inferior to mercury.

The value of the Wassermann reaction is very great, but in few serologic tests is the personal equation so prominent a factor. Blood drawn at the same time and sent to several serologists may lead to different opinions, but in our experience a strong positive Wassermann made by a competent man is fairly certain. However, before subjecting the patient to prolonged treatment, this test should be confirmed by a second and third examination. Unfortunately a negative finding has less value. Syphilis may be present without a positive Wassermann reaction, especially if the patient has been recently treated.

TUBERCULOSIS.

It is almost axiomatic that those afflicted with tuberculosis do not die from the disease but from the associated sepsis. The chief exception is in tuberculous meningitis where the products of bacterial action are confined in a bony box and produce pressure. The influence of sepsis on tuberculosis is most pernicious. In pre-antiseptic times the opening of tuberculous abscesses—so-called cold abscesses—was looked upon with great disfavor. It was well understood that incision into such an abscess was promptly followed by a characteristic type of fever and general physical loss to the patient in every way. The old writers called attention to the fact that when a cold abscess opened spontaneously it did not give rise to hectic but that hectic always followed an incision, nature evidently contriving some valvular method of drainage which permitted the escape of the contents without admitting pyogenic organisms, a method which the surgeon could not imitate. It is true today that no matter how careful the after-treatment may be, the incision and drainage of such an abscess is practically always followed by septic complications. It was for this reason that cold abscesses were aspirated and after removing as much as possible of their contents the opening was sealed. This is good practice at the present time. In many cases iodoform emulsion or formalin and glycerin was injected, hoping to sterilize the cavity. Today such abscesses, under strict aseptic precautions, are often opened by a free incision, thoroughly cleared out, and then filled with salt solution or mopped out with iodoform and glycerin, tincture of iodin, or glycerin and formalin, and sutured completely. These operations, however, have very little to commend them over simple aspiration, which was the early practice. Such abscesses, as a rule, have their origin in bony tuberculous lesions, although they may be seen in other situations.

Modern methods of treatment by rest and mechanical supports have greatly reduced the number of tuberculous abscesses, and the aspiration of those which form has reduced very materially the number of cases in which such

abscesses open spontaneously with sinus formation. In the earlier time patients with tuberculous sinuses were very common, often maintaining a fair degree of health for years. One of the most pernicious practices was to probe such a sinus. This probing was often followed by septic infection. Fortunately, the practice has now become obsolete: such sinuses can be injected with Beck's paste and a radiograph taken which will show their ramification far better than by probing. It should be remembered that in the use of Beck's paste asepsis should be carried out since tuberculous sinuses, the result of spontaneous opening of tuberculous abscesses, are practically free from sepsis and if infection is introduced into the sinus, sepsis with all its complications may follow and interfere with such prospect of amelioration as might otherwise be derived from the Beck procedure.

The behavior of tuberculosis in the peritoneal cavity is greatly influenced by the presence and degree of sepsis. Tuberculous peritonitis is secondary to a local lesion, usually in the fallopian tubes or intestinal tract or from retroperitoneal glands. Pure tuberculous infection of the peritoneum will seldom cause extensive adhesions. This variety is most often seen in connection with tuberculosis of the fallopian tubes. It should not be forgotten that tuberculous peritonitis is a symptom and not a primary disease. It is in reality a conservative process. The abdominal ends of the fallopian tubes in tuberculosis are usually open, unlike gonorrhea, in which fimbriated extremities of the tubes are nearly always closed. (Murphy).

The products of tuberculosis of the mucous membranes of the tubes pass out through the open abdominal ends into the peritoneal cavity. The peritoneum promptly undertakes to remove these tuberculous products and the resulting reaction with the accumulation of free fluid in the abdominal cavity we speak of as tuberculous peritonitis. It has been known for a long time that if the ends of the fallopian tubes were open free fluid and tuberculous peritonitis would co-exist, while if the tubes were closed there would be no tuberculous peritonitis, but the material would be retained within the tube, forming tuberculous pus tubes, sometimes of huge size containing typical tuberculous whey-like fluid. The ovaries are not often involved in this process to a greater extent than the intestines or the peritoneum generally. The proper treatment, therefore, is the removal of the tuberculous tubes leaving the uterus and ovaries, and closure without drainage.

If drainage is used we may have development of sinuses often followed by mixed infection from some intestinal focus and in many instances by prolonged suppuration or fecal fistula. The sequence is about as follows: When the drain is used a certain amount of fluid escapes during the early period. After a few days the drain is removed and there is a little discharge. During the next week or two there is a constantly increasing discharge which becomes purulent and in the course of a month or six weeks a fecal fistula may develop from which a little gas and feces escapes, troubling the patient for months or years. In some instances wide intestinal openings occur with extensive septic infection of the already existent tuberculous lesions, and the patient dies. The drain has permitted subsequent infection.

It is very essential, therefore, that in tuberculosis of the peritoneum drainage should not be used *unless mixed infection is already present.* The old idea that tuberculous peritonitis could be cured by drawing off the fluids and that some special influence was created by exposing the peritoneum to air or by pouring in glycerin, iodoform, oxygen, or what not was based on a misconception. It is true that if the fluids were simply drawn off with a trochar improvement did not result, and it is also true that if the abdomen was opened cure often resulted whether or not any other special treatment was employed. This was due to the fact that when the abdomen was opened the fluid was thoroughly removed and the ends of the fallopian tubes, which were separated from the surrounding parts because of the fluid, had an opportunity to become adherent to some neighboring point on the peritoneum and the tubes, closed by these adhesions, no longer drained the tuberculous debris into the peritoneal cavity. This tubal retention could often be detected by the gradual development of tuberculous pus-tubes after the ascites had disappeared. Such tuberculous pus-tubes in the course of time may heal, but they usually remain a grave source of danger of general systemic tuberculosis.

Vaginal section was at one time very popular for pelvic infections, justly so for those phlegmons due to ordinary pyogenic organisms such as occur post-puerperal or post-abortive. The draining of a pelvic tuberculous infection from tuberculous tubes by an incision through the vagina causes most serious after effects and

often a patient loses her life, not at once, but later through mixed infection and prolonged septicemia with multiple rectal and intestinal fistula.

It can be laid down as a rule that pure products of tuberculosis in the pelvis should not be drained because of the impossibility of preventing septic complications. They should be removed by a clean, careful operation through the abdomen without permitting septic infection and without permitting the chance of sepsis later from drainage. Tuberculosis of the fallopian tubes practically always involves both tubes. This is also true of gonorrheal salpingitis.

I have given these few examples of the influence of septic complications as introduced by drainage which is quite parallel to the knowledge of the ancients in regard to the treatment of the cold abscess, showing the pernicious effect of drainage in permitting a subsequent mixed infection of tuberculous lesions.

Tuberculosis of the peritoneum, however, having its origin in the intestine, is very liable to be a mixed infection from the start and is peculiar in the fact that instead of developing large quantities of fluid it produces a distended abdomen filled with adhesions. Some of these greatly distended abdomens feel almost wooden on palpation and on attempting to open the peritoneal cavity it will be found to be almost completely obliterated by adherent coils of intestine. There were many descriptive terms for this condition according to the extent and virulence of the complicating sepsis, from the completely adherent type in which no free cavity of the peritoneum would be found below the transverse colon and those milder and attentuated types in which free fluid would be found with comparatively few adhesions. This very interesting condition was long a puzzle, but I have been able to secure three cases in so early a stage that we found colon and other bacteria in connection with the tuberculosis. A little later the septic infection could not have been detected because these bacteria, having a shorter life, would have been destroyed and in the later stages only the tuberculous condition would have been apparent, although the adhesive process had been caused by the septic complication.

The effect of sepsis upon tuberculosis is well shown in the so-called hypertrophic tuberculosis of the cecum and head of the colon. Here a huge tumor may exist with enormous thickening in the submucosa, giving a picture almost typical to the naked eye of carcinoma. Some cases of this kind have been explored, believed to be carcinoma, and on account of the enlarged glands, usually from sepsis, however, rather than from tuberculosis, have been considered inoperable and a colostomy done. Such patients may live for years—supposed examples of the slow course of carcinoma of the cecum.

In 1899, I published an article on "Localized Tuberculosis of the Intestine." At that time it was not believed that primary localized tuberculosis limited to any portion of the intestinal tract ever occurred, but that it was always the result of pulmonary tuberculosis, usually from swallowed sputum. I called attention at that time to the fact that in my opinion cow's milk was responsible for this infection. I instanced that in the country districts pulmonary tuberculosis was comparatively rare but that localized tuberculosis—of bones, joints, intestines and glands—was exceedingly common, that it was customary to use raw milk as a regular article of diet and that a considerable percentage of milk cows were infected with tuberculosis. It was in this way that swine became so extensively tuberculous. A farmer feeding milk to his hogs, if his dairy herd was free from tuberculosis, had no tuberculosis among his hogs, but when the milk began to be carried to the separators and creameries and the farmer took back not the milk from his own herd but a mixture of milk from many herds, tuberculosis in hogs was almost the rule. This I believe is now prevented by law. But of course that is only for hogs which are of value commercially. For our children no such protection exists. Tuberculous milk from tuberculous herds is peddled around in nearly every city in this country and little children who are infected with bovine tuberculosis are met with on every hand.

Koch, in a series of experiments, thought he proved that bovine tuberculosis did not attack the human. All he did, however, was to demonstrate that healthy cattle did not acquire human tuberculosis. We already knew that healthy human beings would not take tuberculosis. It required a breaking down, so to speak, of the constitution of the human or of the cattle to permit the development of the disease.

I think it can be said at the present time that localized tuberculosis of the bones, joints, intestines and glands is usually due to the bovine type of bacilli and obtained from infected milk. Milk is infected not only with tubercle bacilli but with septic bacteria as well, and these

latter micro-organisms set up lesions in the gastro-intestinal canal marked in younger life by gastro-intestinal irritation, diarrhea, etc. Through these lesions, the tubercle bacillus gains entrance to the circulation. One of two things must be done. Milk must be pasteurized and no milk allowed to be sold that has not been pasteurized or else it must be certified from herds that have been carefully tested for tuberculosis and in which the milk is gathered with extreme cleanliness. The pasteurization of milk is and has been employed in many cities. In Philadelphia, all milk will be pasteurized. Heidelburg which was notorious for its tuberculous children has been almost freed from the white plague by the pasteurization of milk. It simply means heating the milk up to 160 degrees under proper conditions, which not only kills the tubercle bacilli but the bacteria of sepsis as well. It is probably today the most practical way of handling the milk question.

CANCER.

Much of the weakness and suffering of cancer is due to associated sepsis and much of the pain comes from septic infection. In the later stages and especially where the cancer has spread to other parts of the body, nerve pressure may be the cause of very severe pain as in "paraplegia dolorosa." But the rule holds good that in the primary growth the action of septic bacteria on the necrosed tumor itself and the pyogenic infection of the surrounding tissue already sadly crippled by the malignant change are the causes of the greatest distress and hasten the death of the patient. In internal situations, such as the liver, where the growth is not exposed to infection, the tumor may often reach large proportions and the patient die without severe suffering. Pierce Gould found in the Middlesex Hospital, London, that careful attention to cleanliness and antiseptic measures gave so much relief that morphia was seldom required; even further, that patients could not only be relieved of the pain, but that the symptoms were so greatly ameliorated that they gained strength and flesh merely by scrupulous attention to cleanliness.

Bland-Sutton believes that the mortality following operations for cancer is to a great extent influenced by the amount of sepsis present and especially by the character and virulence of the invading bacteria. Cancer of the cervix uteri, by reason of the virulent streptococci present in its sloughing recesses, gives a high mortality following radical operation; and without question much of the benefit which follows the application of heat and radio-active substances in cancer of the uterus is due not only to the destruction of the growth itself but also to the destruction of the bacteria present. It is to be noted that the great mortality which has marked radical operations for cancer of the large bowel and rectum is due to septic complications. In fact it was the high mortality of primary resection of such colonic growths, especially those beyond the splenic flexure, which led to the two-stage operation of Mikulicz, Bruns and Paul. In this procedure the diseased portion of the large bowel is lifted from its bed with the fat and glands, and brought outside the body, and left to remain in this position until it heals in. The involved sigmoid may then be cut away and after the parts have been rendered reasonably sterile, the continuity of the intestinal tract can be restored by an operation which is largely extraperitoneal. In this way the mortality has been reduced one-half. In the rectum the same result is obtained indirectly by first doing a colostomy and subsequently carefully cleansing the lower fragment for some days before doing the radical operation, again reducing the mortality one-half. So true is this that an apparently inoperable growth in the rectum, fixed and adherent, may often be so benefitted following colostomy and cleansing as to become operable.

There is a type of cancer which is often called inflammatory—a foul, indurated ulcer, covered with sloughing material, with an extensive inflammatory zone, brawny and red in character. If operation is attempted in this condition, the patients are seldom cured of the disease. The lymphatics in the vicinity become loaded with cancerous material from the cut surface and spread to other parts quickly. If such a condition, however, is treated by slow coagulation with the actual cautery, the parts will become clean and healthy, the bacteria and cancer both being destroyed. When the induration and inflammatory zone have completely disappeared the entire area may be removed with plastic repair of the defect. In this way patients can be cured who would otherwise be hopeless.

I examined a woman recently who had been to us twenty years ago with a cancer involving the scar of a burn on the buttock received when she was a child. There was a sloughing, foul, indurated cancer and an inflammatory zone, altogether the size of a dinner plate. Under an anesthetic this was thoroughly cauter-

ized with the actual cautery, charring it until a perfectly dry eschar was obtained. This was treated with dry boracic acid until it separated, which required several weeks. For fear some of the cancer might have been left, the entire area was then removed with the knife and skin-grafting done. Permanent cure followed.

About the mouth the same conditions often obtain—red, brawny tissue surrounding the cancer as a result of infection. Here the thorough use of the actual acutery, as advised by Ochsner, frequently prepares the field for successful operation.

Heretofore we have not given sufficient attention to the septic complications of cancer, especially in relation to preparing the field for operation. The extraordinary change which may be made in a growth by the removal of secondary infection (sepsis) must lead us to the conclusion that not only is sepsis a cause of serious symptoms to the patient, but that it is a most grave condition considered from the operative standpoint, and that the success or failure of an operation may depend as much upon the septic condition as upon the cancer itself.

We say that cancer is malignant in proportion to the ratio of cells to the stroma, the cells representing the cancer, the stroma the resistance of the patient. Many patients have comparatively little resistance to the cancerous cell, but react vigorously to a burn, throwing out an enormous amount of connective tissue which may strangle the few cancer cells that have not been destroyed by the cautery.

It has been shown that the cancer cell, like all embryonic cells, is especially injuriously affected by heat, and that the difference between the normal cell and the embryonic cell of cancer in this respect is from 15 to 30 degrees. Based on this, Percy, using a rheostat and an electric cautery, has introduced a method for the application of heat by a slow cooking process, keeping within this marginal difference. In this way the heat, in a manner, reaches out into the tissues and destroys the cancer cell beyond its injurious effect on the normal tissues. We are now applying the Percy method of infected cancers in all situations.

SUMMARY.

1. The important role of associated septic organisms in the three most widespread plagues of mankind—syphilis, tuberculosis and cancer—is not generally appreciated.

2. Much of our conception of the primary lesions of syphilis is based on appearances due not to the spirochaete alone but to associated septic organisms. Because of the lack of hardness in the base, a hardness due to sepsis not to syphilis, the diagnosis of chancre of non-venereal origin is apt to be missed in these days of cleanliness and antisepsis. The diagnosis should rest on microscopic evidence, the finding of the spirochaete in the chancre and later by serologic evidence rather than on the gross appearance of the secondaries, the accentuation of which is due to sepsis and therefore in clean people may not be a prominent feature. The importance of a correct early diagnosis in the prevention of systemic infection cannot be over-estimated. If this great opportunity is missed, early diagnosis will at least enable careful curative treatment.

3. Most patients afflicted with tuberculosis do not die from the disease but from the associated sepsis. The surgeon must use great care in operations on pure tuberculous lesions to prevent secondary infections with other organisms and not drain on account of the danger of subsequent infection, unless mixed infection is present.

4. Tuberculous peritonitis secondary to tuberculosis of the fallopian tubes is often pure and seldom causes extensive adhesions. The proper treatment is the removal of the tuberculous tubes and closure with drainage.

5. Peritoneal tuberculosis having its origin in the intestine is liable to be a mixed infection from the start and produces a distended abdomen filled with adhesions.

6. In tuberculosis of the kidney, septic infection is responsible for many of the most grave symptoms, though in a large majority of tuberculous kidneys for which nephrectomy must be done, there is no active septic complication. When mixed infection exists, the ureter should be drawn up and stitched to the skin following nephrectomy. When it is absent the ureter, if patulous, should be injected with five to ten minims of carbolic acid, sutured and dropped into the wound which should not be drained.

7. The draining of pelvic tuberculous infection by an incision through the vagina may result in mixed infection and prolonged septicemia with multiple fistulous openings into the bowel, often causing the death of the patient.

8. Much of the cachexia of cancer is due to associated sepsis and much of the pain comes from septic infection. Cleanliness and antisepsis give great relief.

9. The high mortality following radical oper-

ations for cancer of the large bowel and rectum is mainly due to sepsis and may be reduced one-half by two-stage operations. As much may be said in advanced cancer of the cervix when the preliminary cauterization with the actual cautery, especially the Percy method, followed by a complete hysterectomy give greater promise of cure with a smaller mortality.

10. Cancers of the surface of the body covered with a sloughing material and surrounded by an extensive inflammatory zone should be destroyed with the actual cautery and when the induration has disappeared, the entire area may be removed with plastic repair of the defect.

REFERENCES.

Beck, Emil G.: Fistulous Tracts, Tuberculous Sinuses and Abscess Cavities. A New Method of Diagnosis and Treatment by Bismuth Paste. *Jour. Amer. Med. Assn.*, 1908, ii, 868-872.

Blair, Vilray P.: Surgery and Diseases of the Mouth and Jaws. 1912, C. V. Moseby Co., St. Louis, 441-442.

Bland-Sutton, John: The Surgeon of the Future. *Lancet*, London, 1914, ii, 289-294.

Corner, E. M.: Sepsis in the Recognition and Non-Recognition of Syphilis. *Lancet*, London, 1914, ii, 491-492.

Gould, A. P.: The Treatment of Inoperable Cancer. *Lancet*, London, 1913, i, 215-219.

Mayo, W. J.: Localized Tuberculosis of the Intestine. A Report of Seven Cases Operated Upon. *New York Med. Jour.*, Aug. 19, 1899.

Percy, J. F.: The Results of the Treatment of Cancer of the Uterus by the Actual Cautery, with a Practical Method for its Application. *Jour. Amer. Med. Assn.*, 1912, lviii, 696-699..

Rosenow, E. C.: Transmutations within the Streptococcus-Pneumococcus Group. *Jour. Infect. Dis.*, 1914, xiv, 1-32.

White, W. Hale: Abstract of the Bolingbroke Lecture on Prognosis. *Lancet*, London, 1914, ii, 141-145.

THE BACKWARD CHILD.*

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I appreciate very highly the honor extended to me in asking me to come here to say something to the Calhoun Medical Society and others concerning the "Progress of the Backward Child." I fully understand that this invitation was not of a personal character, but was extended to me because I happen to be more or less identified with matters appertaining to the health of school children.

I accepted this invitation with pleasure and alacrity, because I believe that the more health topics are discussed in public the better it is for all parties concerned, and the sooner will the inefficient and quack doctor be put out of business.

The time has passed when doctors feel that they must get off by themselves and discuss matters pertaining to the health of the people. These matters should be openly discussed, and the people should be made intelligent, should be made to understand what health means, what disease means, and how they can best perpetuate health and cure disease. I am and have been intensely interested in the health of school children, believing, as I do, that this is the place to begin the work of manufacturing a great and strong nation. The public schools are a public trust, and you and I are the administrators of this trust. It is, therefore, up to you and to me to see that our public schools are properly managed and conducted so that not only will a child's mind be trained and educated but that his bodily and moral conditions shall receive equal consideration. We assume the responsibility of educating the young. We not only invite the children to attend our public schools but we *compel* them to come. It is, therefore, up to us to see that these public schools are of such a nature, in all their departments, as will turn out the very best possible product. We are manufacturing citizens; we are manufacturing the next generation; we are manufacturing the people who will become our future presidents, senators, congressmen, governors, bankers, merchants, teachers and doctors. We can produce a high grade of citizenship, or a poor grade of citizenship. I am sure that all good citizens are of the opinion that, whether this country is at war or whether it is at peace, we want the people of this country to be as strong physically, mentally and morally as possible. In order to do this we are compelled to deal with children as early in life as possible, and it is our duty to see that their bodies and minds and morals are brought to the highest possible point of perfection.

Education is the greatest foe to racial retrogression, but no matter how high the degree of presented instruction becomes in our public schools our children cannot take advantage of it unless their bodies are in good physical condition. Let it never be forgotten then that while it is our desire to bring our public schools up to the highest possible intellectual standard, we must first of all see that the children are in proper physical condition to benefit by presented

*An address delivered before the Calhoun County Medical Society at Battle Creek, Mich., February, 1915.

instruction. It should also be remembered that while intellectual advancement in schools is, of course, of enormous importance, school authorities should not make intellectual school tasks so difficult to conquer that the victory will mean the impaired physical condition of the average child. Our children should not emerge from their school-life with impaired bodies. They should graduate materially improved, not only in mind but also in body and morals. Parents have a right to expect this as the harvest of school life and unless these results can be produced our public school system is a failure. I am happy to say, however, that it is *not* a failure, and that these desirable results are almost always obtained.

It is most fortunate that we have public schools, not only because through their influence we are enabled to impart an education, but because by having the children massed together in our schools a large portion of their time we are enabled to have the opportunity and privilege of endeavoring to teach them to become good and useful citizens. Our children spend most of their waking hours in our public schools; as a matter of fact, it is established that they spend one hundred and fifty days in the year in schools. To our public schools come the children of all nations, because practically all nations are represented in our cities of any appreciable size. The schools, therefore, become the great melting pot of the nation where children congregate, mingle and are educated.

Our object is to make good, useful, honorable, American citizens and I am proud to say that, in most instances, this high ambition is successfully attained. The boy of today is the man of tomorrow, and no matter how humble may be the boy's birth and surroundings, no one can tell the position that he may be enabled to attain in society through the influences of his early education in our public schools. Our teachers should never forget the sacred trust which is imposed upon them, and what it means to have a share in the forming of the next generation. Teachers really become almost parents to the children, guarding over their physical, mental and moral well-being. In fact, they are often *more* than the parents of the children, for many of our poor children are cursed with parents from whom they never learn anything but evil. The only good that ever enters into the life of many of our school children will be found to be within the sheltering arms of the schools. They may go home to drunken, dirty, thieving, immoral parents and surroundings and the only thing that keeps them from continuous degradation is the influence of the public schools.

Education lessens crime, therefore, let all of our children have an education. While some criminals are educated it has been estimated that, at least, over 60 per cent. of the criminals in this country are uneducated, defective men and women, and a vast majority of them were unfortunately possessed of some physical defect that made it difficult for them to remain in school and obtain the benefits of school life. They, therefore, by a natural chain of circumstances evoluted into criminals. It is far cheaper for the state to provide the highest kind of education, and to see that children are in a physical condition adequate to receive such an education, than it is to allow children to grow up uneducated. It is cheaper to support schools, teachers, gymnasiums, medical inspectors, dispensaries and hospitals than it is to support policemen and jails and reformatories. It is not only cheaper but it is *better* and produces the enormous satisfaction of knowing that a duty has been accomplished and the feeling that we have done the best we could for our children, who will soon succeed us in the management of our country.

Let me ask this audience to accompany me in an imaginary journey—to the free clinics or the public schools. We will not have to look long before we find a little boy with pinched countenance and with an illy nourished appearance. If we inquire into the conditions surrounding this little boy we will find, perhaps, that his parents are poor, shiftless, degenerate people; that the boy has nothing in his home life but misery, dirt, starvation and immoral surroundings. This boy makes little or no progress in school. He keeps behind in his classes and takes no interest in his studies. He is mischievous and is a detriment to school discipline. If this boy is examined by an oculist, it may be found that his eyes are defective or diseased and that it is impossible for him to make progress in school. He may have cataracts or trachoma or some other inflammatory condition of the eyes. He may be short-sighted, astigmatic, hypermetropic, or the muscles of his eyes may act badly, and these drawbacks prevent school progress. He cannot see, as other children can, across the room, and every time he studies he may have headaches or eyeaches so that study becomes painful and disagreeable; he, therefore, shirks his studies as

much as he possibly can. He begins to stay away from school and soon becomes an habitual truant; he seeks the society of other truants and vagabonds and becomes mischievous and a committer of small criminal acts. He, perhaps, is sent to a reformatory where he meets more criminals and learns of larger crimes. After a while he becomes a professional criminal and may end his life in the penitentiary or on the gallows.

We will not have to look long before we will find another boy with a particularly stupid countenance, accentuated by the fact that he usually breathes with his mouth open. He is more or less deaf and, perhaps, he has a foul smelling discharge from his ears, which indicates dead bone in his ears that not only impairs his health but is a daily menace to his life. This boy is what we call a mouth-breather. He breathes through his mouth because he cannot breathe through his nose. His throat and nose are stopped up with enlarged tonsils, adenoids or nasal obstructions. Such conditions, after a while, produce various ear diseases and the child becomes more or less deaf. Being deaf he cannot hear what is said in school. He hates to be continually asking the teacher to repeat; he falls behind in his class; he becomes ashamed; school life becomes distasteful and eventually he, also, may become a truant or a criminal, a menace and expense to society.

These are no fancy pictures which I have drawn for you in order to emphasize my subject. They are living, breathing truths that I could demonstrate to you over and over again, in a few hours visit to dispensaries, hospitals and schools. These are the people it is our duty to help: the rich can take care of themselves. They do not always do so but they can if they will. The poor, however, have no money, are ignorant and ill-advised, and if we wish to do any good in the world along these lines we must reach down—down to the very dregs of society and pull up the poor, the helpless and the dependent. The education of such children not only benefits themselves, the schools, the teachers, and the other scholars but they carry this education home; they also carry decency, cleanliness, hygiene and morality home, so that by educating the children we go a long ways in improving the condition of the parents and the homes.

Children who stay in one room term after term are called repeaters, and repeaters are not only a trial to the teachers and a general nuisance to the school but they are an enormously expensive luxury. It is estimated that there are in the United States about 3,000,000 repeating children and it costs about $100,000,000 a year extra to educate them. Most of such children are thought to be mentally defective but, as a matter of fact, they are almost all *physically* defective or diseased. It is estimated that only about 3 per cent. of these apparently defective children, are really defective—the rest are only *apparently* defective. In other words—there is really no necessity for the existence of a large number of repeating children and the money spent upon the apparently defective children who repeat is uselessly and wantonly expended. It would only take a small portion of this $100,000,000 to straighten out the tangle and almost prevent repeating by placing the children in a reasonably good, healthy condition, which would mean that not only would their health be benefited, but their school progress would be improved; every one would be benefited, and an enormous amount of money might be spent for better purposes.

As a concrete instance bearing upon the subject as to what sickness costs the state, I will say to you that in the state of New Jersey alone, $44,000,000 are invested in public schools. It costs about $13,000,000 a year to run the schools and there are about 500,000 pupils. The possible attendance of these pupils, estimated by days, is 71,000,000 days and yet the number of days of actual absence from school was 9,000,000. As Dr. E. A. Ayers of New Jersey expresses it—here is a plant with a total investment of about $60,000,000 losing about 12 per cent. of its utility through absence of pupils, which is equal to about $5,000,000 of capital standing idle. Seventy-five per cent. of these absences were due to sickness which caused a loss of 7,000,000 days or $3,750,000 in money.

I will give you another instance: About 40,000 children annually, in Minnesota, have adenoids in their throats that retard them one year in their studies. One year's schooling in Minnesota costs $25.00 per child, therefore, it costs Minnesota $1,000,000 extra per year, to educate these retarded children who might all be easily cured by a simple operation.

These are two instances, of many, which I might give you, but from just these two I will ask you if you think it best, from a purely financial standpoint, to allow children to be defective and diseased, when it is possible to relieve and cure them? Do you not think it is

cheaper to take care of their health than it is to neglect it? And do you not think that all this wasted money might be used for better purposes than to take care of repeating and sick children who do not need to repeat or be sick if only school authorities will detect defects and diseases and see that they are cured?

Two things are necessary to raise corn—seed and soil; we must have good seed and a good soil. So it is with the education of children. The *seed* is the instruction which is offered, the *soil* is the child upon which the seed falls. We must have good rich soil to produce corn. We must have a good, healthy body where we endeavor to plant instruction. No matter how good the instruction is and no matter how pleasantly it may be presented, unless the child's body is sound and responsive, instruction will fall away from it; it will not take root and only a poor crop of knowledge will be gained. I think enough has been said to convince us all that one of the most important things to be attained in our public schools is the health of the scholars.

Let us now briefly consider how this may be obtained. In other words, what is really meant by the medical inspection of schools? This scheme should begin at the very beginning of things and work through systematically to the end. School buildings should be located amid healthy surroundings; should be built upon high ground where the drainage is good; should be away from excessive noises; should have plenty of air and sunlight, and should have plenty of surrounding ground where children can play and where outdoor gymnasiums can be installed. School buildings should be built by architects who make a specialty of this kind of work and such matters as light, ventilation, heating, plumbing, desks, blackboards, walls, books, bathing facilities, etc. and so on should be given every consideration. The teachers should have good health. School nurses should be employed and general and medical inspection of the scholars should be a constant and daily feature of school life. This, in brief, is what is meant by medical school inspection. I am sure that it is evident to us all, that school authorities should be in constant consultation with medical men in order to constantly keep in mind the physical well being of the scholars.

It must not be forgotten that the school proposition is a very large proposition—for there are in this country 20,000,000 school children and there are 260,000 schools valued at $850,000,000, costing $450,000,000 a year to maintain. When we regard the magnitude of these figures, it must necessarily emphasize the importance of conducting the public schools of this country in a manner which will be of the best interests of the pupil, but it also becomes a self-evident fact that the school authorities of this country are conducting an enormous business enterprise that must be conducted in a business-like manner, with due regard to the necessity of both liberality and economy.

It is impossible to deal intelligently with this great subject in a single evening, and I shall only endeavor to talk upon certain phases of it, but I *do* wish to say a few words concerning the necessity for schools for defectives. I wish to remind you that many children who appear to be defective are not really defective mentally. Most of them are defective *physically;* that is, they have some physical defect or disease such as, some eye or ear disease that renders it impossible for them to easily acquire an education. I wish again to remind you, that after *all* the children have been relieved of their physical defects and diseases which are hindering them in the acquirement of an education, there will still remain about 3 per cent. of children who are *really defective mentally. These children are hard to teach.* They hinder the entire school work. They linger in one room year after year and hold back an entire class. This is an injustice, not only to the normal children, but it is an injustice to the defective children themselves. It is our duty to educate these defective children as well as they can be educated, but in order to do this, they should be educated in schools that are expressly opened for the purpose of teaching children who are subnormal mentally. Of course, an entirely different system of education will have to be adopted in teaching these children. Many of them will have to be taught singly and by themselves, by patient and interested teachers. Such an education will frequently result in bringing these children up to almost a normal standard, so that they will become self-supporting citizens; and, in the end, it is economy to do this work, and it certainly is our duty to give every child in every country the advantage of as good an education as he or she is capable of absorbing.

Bearing upon this subject, it may be interesting for you to know that about 50,000 American children are annually removed from school on account of physical defects. Some of these are, of course, really defective mentally but in all probability a very large majority of them

are suffering from physical defects which could be remedied, thus altering the entire life and prospects of such children. Take one state, for instance, the state of Pennsylvania: It has been estimated that about $3,000,000 a year is saved to that state by the relieving of physical defects in school children. It certainly did not cost the state of Pennsylvania anything like $3,000,000 to accomplish this, and there can be no question whatever that the proper medical inspection of children, and the consequent relief from physical defects and diseases, is one of the most effective and far-reaching of economical measures that any state can adopt.

As I have said before, it is impossible, in a short address, to do much more than present certain phases of this big subject, in a merely suggestive manner, and the rest of my address will be devoted exclusively to one of the most important phases of physical defects; namely, the eyes and ears of school children.

It can be confidently asserted that with the single exception of *mental capability* there is *nothing* so essential in the education of a child as good sight and hearing. A child attains most of its knowledge by means of these two senses, and any departure from a normal condition of these two important organs, must necessarily be followed by a proportionate embarrassment in the acquirement of an education.

This subject is of immense importance when we remember that out of the 20,000,000 school children in the United States 16,000,000 children have some eye, ear, nose and throat trouble that is more or less retarding them in the acquirement of an education. It should be remembered that there are 300,000 dependent blind people in the United States costing $15,000,000 a year to maintain and that it costs six times as much to educate deaf and blind children as it does normal children. With this array of facts before us, it is evidently of the utmost importance that the eyes and ears of school children should be placed in as good a condition as possible, in order to enable them to acquire a public school education as easily as possible.

The question is—How can this be best accomplished? It may be safely assumed that it is unwise to place this matter in the hands of parents. Some parents, of course, are alive to the responsibilities of their parental duties but they may not have good judgment. Other parents have no sense of parental responsibility at all and this, of course, must necessarily work a hardship to the children. The matter should then be taken out of the hands of the parents and placed in the hands of the schools. It can be safely assumed that it is unwise to trust to the spasmodic efforts of teachers to discover eye and ear defects. Most teachers are conscientious and earnest and strive for the well being of their pupils. Most teachers are observant and are on the watch for physical defects of all kinds, but after all, there are many defects, not only of the eyes and ears, but of other portions of the body that will easily escape the notice of a watchful and observant teacher. It may, therefore, be again assumed that it is unsafe to leave matters of this kind in the hands of teachers to deal with as they see fit. It may be assumed that the only satisfactory method of dealing with the subject is to devise some method of systematically examining the eyes and ears of the public school children. The question is—how can this best be done?

Obviously, an eye and ear surgeon can do this work better than anybody else, but there are several reasons why this solution of the problem is impracticable, and I doubt if a single instance can be shown where eye and ear surgeons have persistently and constantly carried on this work in a single city in this country year after year. Professional jealousy is one of the principal reasons for the failure of this plan, as those who are not asked to participate in the work are jealous of those who are and a Macedonian cry is promptly raised by those who have been left outside, which is always maintained with such vigor and persistency as to eventually discourage the entire movement. Besides this, many parents object, to a physical examination of their children, saying that such investigations exceed the boundaries of school authorities and that it will not be permitted. They claim to be able to settle all such matters themselves. Such parents are usually neglectful of parental duties and the unfortunate children are the innocent victims. Then, it must be remembered that an annual eye, ear, nose and throat examination by specialists of the public school children of Battle Creek, would cost a large annual sum of money if the services were paid for, and unpaid public services are almost invariably unsatisfactory and difficult to control, under authority. If these specialists should be paid even a small amount of money individually for their services it would aggregate a considerable annual sum which, I will venture to confidently

assert, would not be assumed by either a Board of Education, or a Board of Health, neither of whom *ever* have sufficient money to carry on their work in a really adequate manner. The same financial objection exists if it is proposed that these tests shall be annually and systematically performed on all children by the regular Medical School Inspectors, for if this should be done the Board would have to install a large additional corps of Inspectors and, if they did this, they might just as well employ eye and ear specialists, who could of course, and would do the work better than general practitioners. Should this be done, the question immediately presents itself as to what kind of examinations these eye and ear doctors shall make? Will they be merely brief examinations to ascertain the existence of defects or diseases —with cards sent to parents, urging them to consult their family physician or some eye and ear surgeon of recognized standing, either at his office or a free dispensary, or, will they consist of a thorough examination with or without treatment? In the latter case, offices and equipment would have to be opened in the various buildings, and the question of individual school dispensaries met and solved. I believe that at *the present time*, few cities are prepared to go into this proposition in such a complete and expensive manner, and I believe that the only kind of an inspection by anybody warranted *at the present time*, is an inspection to ascertain simply the existence of abnormal conditions of some kind, leaving it to the parents (with follow-up urgings by inspectors, teachers or nurses) to select their own doctor, and assume their own responsibilities.

It has been suggested that the tests shall be performed by school nurses, and in reply I will say, that I believe this is an excellent plan, (like the previous ones) if the money can be annually set aside for the purpose, but inasmuch as this would considerably increase the annual budget, I think the idea may be set aside as good but not at present feasible. The only other practical method of having this work done, is to have the tests made by the school room teachers, and fortunately this method is, at once, practicable, easy, reasonably thorough, and cheap. All it needs are especially devised vision charts for schools, warning cards for parents, simple report blanks, willing teachers, and the scholars.

Let us suppose that the tests are to be made in Battle Creek—what would be the necessary steps to be taken? Some one familiar with the work and in sympathy with it should be appointed to have charge of it. Room teachers should report to their principals; principals should report to the individual in charge, and this individual should report to the superintendent of schools.

In order that teachers should become familiar with the work, they should attend a demonstrating and explanatory lecture in each city school district, where some one should thoroughly explain the plan and demonstrate its workings on a few scholars. An especially devised vision chart, with teachers' instructions attached, together with warning cards to parents and report blanks, should be distributed to each room. A day (preferably in the early fall) should be set aside for these tests in all the schools. Each room contains about forty or fifty scholars. These can be easily inspected in one day and then the work is done. It is better to examine children in rooms where they can be quiet and isolated, but if such rooms are not available, the tests can be made in the ordinary school rooms. The teachers should have cadets, school nurses, or selected scholars to assist them, as by having some one point out the letters, speak to the scholars in testing hearing, make out the warning cards, etc., the work is simplified and expedited. It will not take more than five minutes to examine a scholar after the work is systemized—so an entire school room can be easily examined in one day.

In order to make the work easy and practical I have prepared what I call a visual chart for schools. This chart contains the usual test letters for testing vision. Each line also contains, at least, one letter for illiterates, which enables small children to be accurately tested as to their visual capacity. The lower portion of the chart contains the teachers' instructions. This portion of the chart should be cut or torn off from the upper portion, on a line which is properly designated.

Three objections to this plan have been raised, notwithstanding the fact that it has been formally endorsed by a carefully selected committee of specialists and educators, appointed by the American Medical Association; is quite generally used all over the United States, and is a law in fourteen states, having been just adopted by the state of Delaware.

The first objection is that teachers are not competent to make the tests, having had no medical education. In reply, I will emphatically state that anybody who knows enough to be

a teacher can easily do the work. No medical education is necessary. Reflect for a moment upon the questions to be asked, and you will see that no medical knowledge is necessary, to answer *any* of them. For instance: "Does the pupil habitually suffer from inflamed lids or eyes?" "Does matter or a foul odor proceed from either ear?" "Is the pupil a habitual 'mouth breather'?" etc. It will be seen that these are all non-medical questions, and the others are the same. No medical knowledge whatever is necessary. The teacher is not expected to express an opinion as to a child's disease; she probably will not have any—she will merely know that the child has red eyes, or that the ears discharge and smell, or that the child is a "mouth breather," etc., etc.

She simply finds out that *something* is the matter, the doctor consulted will do the rest. These questions are so simple that a superficial reader might deem them inadequate, and yet, I trust you will believe me, when I say to you, that, if they are correctly answered, they will disclose the existence of—let us say—95 per cent. of serious eye, ear, nose and throat diseases.

The second objection to the plan is, that it is unjust to place this additional burden upon the shoulders of already over-worked teachers. In reply I will say, that if teachers fully understood the plan, its simplicity and efficiency and its benefits to the scholars, to themselves as teachers, and to the community at large, they would, I believe, be the strongest advocates of its adoption. Teachers should remember that this is *not extra* work for they would be doing school work of some kind under any circumstances and it is difficult to understand why a day's work of testing children's eyes, ears, etc. should be a much greater tax upon a teacher's strength than the usual work of hearing recitations, etc. And then think of the enormous benefit to all concerned, involved in this *one day's work*.

The *children* will be benefited, wherever this plan is adopted, because a vast majority of their eye, ear, nose and throat diseases and defects will be relieved or cured, and blindness, deafness and dumbness will be minimized. They will be enabled to go on with their school work with much greater ease and enthusiasm, their school life will be shortened and their minds, morals, ambitions, life, etc. will be benefited in every possible direction.

The *parents* will be benefited because, the easier acquirement of an education and the general improvement in character of the children, incident to relief from their infirmities, will produce better children, and children who will become of greater assistance in every way to their parents.

The *public* will be benefited, because education means less truancy and idleness, less vagrancy and crime, less money for courts, jails, asylums, etc. and more money for the better things.

The *nation* will be benefited because the healthier and better educated the children become, the greater and more powerful will be its position as a nation.

And lastly, the *teachers* will be benefited because teaching stupid, or apparently stupid children, is the bane of a teacher's existence, and does more to vitiate their nervous and physical conditions, than most of their other labors. If all of their children could be reasonably normal children, their lives would be inmeasurably happier. These eye, ear, nose and throat tests, if properly and systematically carried out each year, and faithfully followed up, will enormously lessen the number of difficult children, and will therefore greatly increase the health and happiness of their teachers. Besides this, it must not be forgotten that non-medical tests of this nature, where the children are hardly touched, and where no instruments are used, will almost completely disarm the opposition of those parents, who, for one reason or another, object to having their children's bodies touched, or their health examined, in the public schools. How then can a teacher spend a day to better advantage, and how can she invest time and work where it will bring greater returns, to the *pupils*, to the *parents*, to the *community*, to the *nation* and to *herself*, than by conscientiously and enthusiastically performing these tests, and in seeing that their spirit, and aims are fulfilled?

Please do not understand me as saying that this is the *best* method for the detection of eye, ear, nose and throat defects and diseases in children. It is not. The *best* way, is to have such work done by medical men, and preferably by oculists and aurists. But, this is also the most expensive way, and in the present condition of public funds, seems to be prohibitive. Nevertheless, when public funds are in such a condition, that medical specialists can be annually and systematically employed to perform this labor, I shall most enthusiastically advise the abandonment of the tests by teachers. At the present time, however, extraordinary

expenditures are impossible, and the tests by teachers are easy, efficient, well endorsed and cheap. I do not believe they would cost the city of Battle Creek, to exceed $100 a year. Why not have them done now?

7 W. Madison St.

CONSIDERATION OF SOME OF THE PHASES OF SYMPATHETIC OPHTHALMIA.*

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It is my purpose to present merely some of the phases of sympathetic ophthalmia which have developed so much interest throughout the ophthalmological world during the past few years. It is today one of the open questions in ophthalmology, and one cannot help but be impressed by the fact that in comparison to the abundance of material in the literature since the first description by MacKenzie, in 1835, there is nothing which throws much light on the so-far entirely unknown nature of the etiological factor of sympathetic ophthalmia.

The present status of sympathetic ophthalmia gives us four main theories as to the pathogenesis and the mode of transmission from the exciting to the sympathizing eye:

1. The migration theory of Leber and Deutschmann.
2. The modified cilio-neural theory of Schmidt-Rimpler.
3. The metastastic theory of Berlin and Roemer.
4. The anaphylactic theory of Elschnig.

Leber was the first to affirm the infectious nature of sympathetic ophthalmia and assumed that the disease reached the second eye by way of the optic nerve, the inflammation creeping forward in the lymph channels of the optic nerve as a lymphangitis.

Deutschmann believed the agents to be staphylococci; a view that has been proven erroneous.

Many facts have contributed to disprove the migration theory—the chief among which is that the slight inflammatory changes in the optic nerve head diminish toward the chiasm instead of increasing as would be the case if the disease entered the sympathizing eye from behind. Also, there are cases on record in which sympathetic inflammation developed in spite of the fact that the optic nerve of the injured eye had been severed.

The second theory assumes that the irritation of the ciliary nerves in the eye first affected indicates a susceptibility to the disease in the other eye through a reflex disturbance of its circulation and nutrition.

Sympathetic irritation is undoubtedly effected by way of the ciliary nerves, for even a foreign body on the cornea may produce lacrimation and photophobia of the other eye, but an actual inflammation with serious anatomical changes cannot develop in a reflex way.

This led to the consideration of sympathetic iridocyclitis as a specific metastasis, first stated clearly by Berlin, in 1880. The etiologic agent enters the general circulation from the eye first affected, lodges probably in various places in the organism but finds conditions for renewed development possible only in the other eye. This of course assumes that these organisms are not pathogenic for the other tissues of the body, analogous to such organisms as cause tetanus, trachoma, foot and mouth disease, all having a predilection for a special tissue.

Roemer has strongly advocated the metastatic theory and has added experimental proof by demonstrating that organisms do enter the circulation from the interior of the eye. Infectious material from aphthae epizootica injected into the vitreous of suitable animals produced a specific foot and mouth disease. Bacillus substilis injected into vitreous of rabbits could be demonstrated in the internal organs as well as in the iris of the second eye.

Meller adds a new idea to the metastatic theory. He believes that sympathetic ophthalmia is due to a definite specific micro-organism which not only may gain entrance to the eye through perforating injury, but may gain access to the blood by an injury occurring in any part of the body perhaps far distant from the eye. It may remain latent until an eye becomes damaged by trauma or intra-ocular tumor and that then the impaired uveal tissue becomes suitable medium for growth of the germ and an endogenous infection results. By its growth in this eye it increases in intensity or the uvea of the other eye has in some way become sensitized to the noxa and disease of the second eye ensues. He reports three cases of undoubted spontaneous sympathetic inflammation showing the characterisic anatomical picture, in which there had been no trauma of any sort to the exciting eye.

*Read before the Detroit Ophthalmological Society, March 3, 1915.

The failure to discover the specific etiologic organism has led naturally to the development of a theory from which microbes as a direct exciting cause are completely omitted and it was inevitable that anaphylaxis should be applied to sympathetic ophthalmia. The elaborate work of Elschnig was the first published and the theory is rightly known by his name. Elschnig's position at present is that a definite physical predisposition favors the occurrence of sympathetic inflammation in an individual, that there is present some constitutional anomaly affecting the whole organism as nephritis, diabetes, auto-intoxication in its broadest sense, etc. The first eye is injured, at the same time perhaps infected with one of the ordinary infective agents, or a nonbacterial inflammation is set up. The disintegration of the tissues which accompanies the inflammation leads to an antigenic resorption of uveal tissue and thence to a hypersensitiveness or sensitization of the remaining uvea of both eyes. As the result of this local hypersensitiveness of the uvea, the existing somatic anamoly finds a point of attack and leads to an inflammation of the uvea of both eyes—sympathetic ophthalmia.

Elschnig has carried out a remarkable amount of careful and laborious investigation in the attempt to substantiate his theory. The greatest difficulty has been the production of an auto-anaphylaxis, as all attempts at producing an anaphylactic reaction in the eye with uveal products of the same species have failed. He has shown that injections of uveal tissue emulsion as well as of chemically pure eye-pigment sensitize the system to eye pigment, not only of the same species but to eye-pigment of other animals. This sensitization can be produced with pigment of the same species but not of the same individual nor to so marked a degree as when the pigment of another species is used. The reaction is organ-specific and not species-specific.

The anaphylactic theory leads to the supposition that the inflammation is the result of the occurrence of albumin bodies of high molecular weight, perhaps acting like ferments. The origin of sympathetic inflammation following intra-ocular sarcoma is explained in part as the result of the toxic action of the breaking down products of albumin.

The fact that experimental injection into the eye of ferments and bacterial toxins by Guillery has produced the same anatomic picture as is obtained in sympathetic ophthalmia is claimed by Elschnig to be decisive for the recognition of his theory. He himself has published a case in which he obtained the same anatomical picture by the injection of hemolytic serum into the human eye, with a resulting inflammation of the uvea. On the other hand Roemer and Gebb, experimenting on nearly 1,000 guinea pigs concluded that the body of an animal cannot be sensitized to its own albumen. Morax and Bollack from an exhaustive study of the subject found that no anaphylaxis could be obtained with choroidal and uveal pigment.

The time interval between the inflammation of the first and that of the second eye is explained by the anaphylactic theory that at least fourteen days are required for the resorption of uveal pigment and sensitization of the remaining uvea; while Fuchs explains the cause of the delay by the necessity of the inflammation in the first eye to reach a certain height before metastasis can occur. The very long intervals of time are explained by a fresh anaphylactic inflammation occurring in the first eye—that the constitutional anomaly or auto-intoxication, could only at a late date effect an antigenic resorption of uveal tissue with sensitization of both uveas or produce the inflammation of the sensitized uveal tissue. On the other hand Fuchs again claims the micro-organisms may lie latent in the first eye for months or years until, again becoming active acquire the ability to set up metastasis to the second eye.

The occasional appearance of sympathetic opthalmia some little time after enucleation of the exciting eye is understood by Elschnig that the absorbed uveal antigens which are generally sensitizing the uvea of the second eye, remain in the blood serum for a considerable period after the source of production has been removed. Hegner claims to have demonstrated this at least a week after enucleation, by the Abderhalden ninhydrin reaction, while Von Hippel, who has applied Abderhalden's method to the investigation of sympathetic ophthalmia concluded that the reaction was not specific for sympathetic ophthalmia.

The metastatic theory explains this equally well on the ground that the specific agent is present in the general circulation before the exciting eye is removed and may retain its vitality for a long time in the body. We know that the trypanosomata, which have apparently disappeared may reappear after many weeks.

Elschnig believes that enucleation of the exciting eye has no effect on a sympathetic ophthalmia already established and that the sensitization of the uvea explains it. His experience

in this respect is quite different from other writers, most of whom believe that removal of the exciting eye has an ameliorating effect upon the course of the disease.

The cases of sympathetic ophthalmia after nonperforating wounds and sarcoma of the choroid is equally well explained by the anaphylactic theory or by the endogenous hypothesis of Meller.

Acceptance of the anaphylactic theory leads to the assumption that there is no decided difference between the so-called idiopathic or spontaneous irido-cyclitis and sympathetic ophthalmia, and the work of Kümmell and Weismann has to a certain extent corroborated this. While it is probable that a certain proportion of the so-called idiopathic iridocyclitis is in reality sympathetic ophthalmia, as the three cases of endogenous infection reported by Meller, Walter Brock, from a very careful study of the Munnich cases, was able to show that the idiopathic cases both from the view-point of bi-laterality and outcome, differed from the sympathetic cases.

The non-occurrence of sympathetic inflammation after panophthalmitis is explained by the complete destruction of the uveal tissue and pigment so that it cannot give rise to the formation of antibodies. It is difficult to understand how the uveal tissue can be so rapidly and so completely destroyed as not to allow of antigenic resorption on the basis of the anaphylactic theory. On the other hand, it is not hard to conceive, according to the microbic theory, that panophthalmitis should not set up a sympathetic inflammation as it is quite a different process caused by quite a different group of organisms. Only an irido-cyclitis of a well defined sort, marked by a peculiar, very characteristic anatomical condition can be associated with sympathetic ophthalmia.

Anatomical picture of fully developed sympathetic ophthalmia is, in the light of our present knowledge, one of the strongest arguments for a microbic origin of the disease. It consists essentially of a nodular or in later stages of a diffuse infiltration, with great thickening of the uveal tract with lymphocytes, with the frequent occurrence of epithelioid and giant cells. The infiltration has a tendency to pass out along the choroidal vessels but shows a marked tendency to spare the choriocapillaries. In advanced cases the whole choroid thickens, the iris is converted into a thick tumor, the ciliary body is turned into mass of infiltrate and the sclera and other tissues become involved. The characteristic nodules of lymphocytes with epithelioid cells and giant cells so closely simulate tuberculosis that it is often difficult to differentiate. The great difference was supposed to be the absence of necrosis but recently Meller has found necrosis in two cases of undoubted sympathetic ophthalmia. So definite are the histological findings that out of 200 eyes enucleated for various causes, Fuchs, without knowing the histories, from the microscopical appearance alone, was able to select thirty-five which had caused sympathetic ophthalmia. He failed only in one case and none of the other cases were found to have been associated with sympathetic disease. While the early stages may not differ greatly from the effect produced by experimental anaphylaxis, intravenous injections of ferments, etc., it is hard to believe that the fully developed granuloma of sympathetic ophthalmia, so closely resembling leprosy, syphilis and tuberculosis, can be the product of anything but microbic action.

One of the weak points in the anaphylactic theory is the assumption of a constitutional anomaly. It is a well recognized fact that sympathetic ophthalmia occurs most frequently in healthy robust individuals. The fact that Elschnig has found indican in the urine of many with no other demonstrable anomaly, to my mind is of little significance. Constitutional anomalies are far more frequent in individuals with other forms of iridocyclitis and diseases accompanied by extensive disorganization of the uveal pigment who never develop sympathetic ophthalmia.

The insidious onset which generally characterizes sympathetic ophthalmia and the clinical course is distinctly at variance with the sudden onset and rapid rise of ordinary anaphylactic manifestations and while some anaphylactic inflammations progress slowly, after quickly reaching their maximum without a second dose of antigen, which is analogous to the slow course of sympathetic ophthalmia, it is hard to conceive how an eye, in which all the uveal tissue must be sensitized at practically the same time, should show the separate and isolated areas found in the anatomical specimens of sympathetic ophthalmia. The uveal pigment is supposed to be the chief factor involved in the anaphylactic process, which makes it difficult to explain the frequent exemption of the retinal pigment layer except in the severest cases.

Also the occurrence of optic neuritis frequently in the beginning of sympathetic oph-

thalmia can hardly be explained as the result of a sensitization of uveal pigment.

The convenience of the anaphylactic theory is very attractive in the easy explanation which it offers for the absence of a specific micro-organism. But, as Morax remarked at the seventeenth international congress of medicine in London, it is largely based on exceptional cases and ignores the reduction in the number of cases of sympathetic ophthalmia which has accompanied the aseptic treatment of wounds of the eye, and, further, that to establish his theory Elschnig must prove that ocular traumatism can provoke absorption of uveal albumin or pigment, which can act on the healthy uvea of the other eye in virtue of a process of sensitization favored by a general bad state of health, the existence of which can be recognized, in the absence of other symptoms, by indicanuria. As none of these propositions appear to Morax to be proven, he considers that Elschnig has not brought sufficient support to a theory which he proposes to substitute for more rational conceptions, the clinical consequences of which are of capital importance.

Considerable work has been done on the changes in the differential blood count in sympathetic ophthalmia during the past few years. Gradle, while working in Elschnig's laboratory found a uniform increase in the mono-nuclear cells with a corresponding decrease in the polynuclear count in cases of perforating injury with subsequent irido-cyclitis. Ormand obtained similar results in three cases of sympathetic ophthalmia. Browning, at Moorfields, working with the blood of definite cases of sympathetic ophthalmia, made a further differentiation of the white blood cells and found a marked increase in the number of large mononuclear leucocytes while the polynuclear leucocytes were correspondingly diminished. He found a typical blood picture in practically every case of well-marked sympathetic ophthalmitis. The average blood count in sympathetic ophthalmia as compared with the normal count is as follows:

Polymorphonuclears	54%	Normal 60%
Lymphocytes	28%	Normal 20-23%
Large Monuclears..	16%	Normal 2-5%

This blood picture shows a very striking similarity to the blood counts of some of the protozool diseases, malaria, syphilis, trypanosomiasis, Kala-azar, etc., and this fact has been taken as very suggestive that sympathetic opthalmitis may be of protozool origin. Browning also found that in many cases the blood showed marked changes at a time when there was still no other evidence pointing to the probable onset of sympathetic ophthalmitis. The blood frequently remained normal for weeks and then suddenly showed all the signs of a typical protozool count, so that a normal count could not be taken to exclude danger of sympathetic ophthalmia but a positive count, namely an increase in the large monuclears with some lymphocytosis was considered very ominous. Removal of the exciting eye caused a return of the blood to normal in a case of Lawford's.

The fact that salvarsan had been of value in the treatment of other protozool diseases besides syphilis, led to its employment in sympathetic ophthalmia. Syphilis was excluded as far as possible by the Wassermann reaction and the first case treated in Mr. Lang's clinic at Moorfield's, February, 1911. The first results were sufficiently good to justify its use, also the blood count became normal. Relapses followed, each time accompanied by a tendency of the blood count to revert to the protozool type, while a further dose of salvarsan again improved the eye and the blood, at times with permanently beneficial results. Twenty cases of sympathetic ophthalmitis treated with one of the salvarsans have been reported by Browning and while the results with a few marked exceptions have not been startling, they have been much better than the average with the older methods of treatment. Cases of sympathetic ophthalmia treated with the salvarsans have been reported by Sydney Stephenson, M. S. Mayou, Schieck, Calhoun, Manolescu, Chaillons, Siegrist, Adamuck, etc. In some, the results have been striking even when other therapy had apparently failed, while in others, the results have not been as favorable. Some good results have been reported by Bernheimer and Strewe with tuberculin in patients with a positive tuberculin reaction. One celebrated case of Zur Nedden's was treated with injection of blood serum obtained from an individual who had been a victim of sympathetic disease and complete recovery followed. Derby and Pratt also obtained one good result in four cases with similar treatment. Also the beneficial influence of the salicylates, benzo-saline, mercury and urotropin, and atophan, point in the direction of a microbic origin. Should subsequent experience prove salvarsan to have anything like a specific effect upon the disease it would go a long way toward proving the microbic, possibly protozool, origin of sympathetic ophthalmia. The pathogenesis of sympathetic ophthalmia is still a muted question but with the amount of

interest that has been aroused of late years and the work that is being done, there is hope that before long we will know more about the nature of this disease.

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INTESTINAL TOXEMIA.*

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The subject of intestinal toxemia is unfortunately not so thoroughly understood as the frequent use of the term by the profession would indicate. Usually the term "autointoxication" is used when reference is made to a toxemia of intestinal origin. This is an unfortunate use of terms. "Autointoxication," in the strict meaning of the term, has to do with an intoxication resulting from the action of certain materials elaborated by the tissues of the body during metabolic activity, and has no reference to toxins resulting from bacterial activity, whatever the site of production may be. We consider the possibility of toxins being elaborated by the bacteria that may normally or accidently be inhabiting the intestinal tract, and that these toxins may be absorbed and exert a deleterious effect on the organism. But we should always recognize that those toxins are exogenous and that the intoxication resulting from the absorption or accidental inoculation of the body should never be confounded with the intoxications resulting from metabolic activity of a normal or abnormal character. We should, then, avoid the use of the term "autointoxication" or "intestinal autointoxication" when reference is made to a toxemia of intestinal origin, and use instead the term "intestinal toxemia," or "intestinal intoxication."

PATHOLOGICAL PHYSIOLOGY OF INTESTINAL FUNCTION.

Since the time of Bouchard, who so interestingly, but unfortunately with a great many inaccuracies, presented his ideas on the subject of autointoxication, there has been a great interest in the possibility of our being poisoned by the absorption of the products of the bacterial activity of those forms of bacteria which may practically always be found in the intestinal tract. In many instances certain investigators have been led to make unwarranted statements which were not based on proper scientific findings, and have attributed too many of the ills of mankind to the action of toxins of intestinal source; just as a few years ago some considered uric acid as the source of a great many troubles with which it had nothing to do. Nevertheless, a great amount of work has been done, the results of which apparently prove beyond reasonable doubt that it is possible for the organism, under certain conditions, to suffer severe injury, because either the normal barrier to the absorption of these toxins is broken down, or they are produced in excessive quantity. In the province of this paper it will be impossible to consider the proofs of such phenomena except in a very brief way, and only as forming a foundation for the consideration of the therapeutics of intestinal toxemia.

A brief summary of the normal digestive processes is as follows:

In the mouth the food comes in contact with the first secretion of digestive glands. The saliva has a far greater function than was formerly supposed. In addition to the purely mechanical preparation of the food for deglutition, which is accomplished by thorough insalivation, the saliva exerts a very decided amylolytic action on the starches through its foment amylase, and because of this early conversion of a portion of the polysacharides into disacharides and into maltose, we have that portion ready for absorption in the upper part of the intestinal tract before the products of digestion come in contact with the bacteria that act on the carbohydrates and to some extent lessen their calorific value to the body. But probably of still greater importance is the function of the saliva in stimulating the secretion of hydrochloric acid and pepsin. This is accomplished, as shown by Pawlow, through the psychic stimulation resulting from the pleasurable sensations experienced when the flavors of the food stuffs are brought into proper solution by the salivary secretion.

In the stomach the food comes in contact with a gastric secretion whose principle action is on the proteins. The carbohydrate digestion, under the influence of the amylase of the saliva, is inhibited by the action of the free hydrochloric acid. This inhibition, however, is delayed, as has been proven by some authorities, who have demonstrated that the starch digestion goes on in the stomach for a period of from fifteen to forty-five minutes, depending somewhat upon the amount of hydrochloric acid secreted.

The three ferments found in the gastric secretion are lipase, a fat splitting ferment, a

*Read before the Kalamazoo Academy of Medicine, Oct. 27, 1914.

proteolytic enzyme termed pepsin, and a milk curdling ferment called chymosin. Lipase, which under certain conditions has the ability to digest fat or to emulsify the free fats and transform them into fatty acids, is of very little importance, as it is only active in a neutral or slightly alkaline reaction. The chymosin, or rennet, a milk curdling ferment, has to do solely with the curdling of milk through its action on the casein, probably a conversion of casein into peracasein, which is activated by the hydrochloric acid. It is secreted as a proferment, but all acids have a similar effect on it. Casein is soluble, while peracasein is insoluble. The chymosin is active in the neutral or acid reaction; one part will coagulate from 100 to 1,000 parts of milk.

The principle digestive changes of the food in the stomach take place under the influence of the pepsin-hydrochloric acid combination. The action of the pepsin in the presence of hydrochloric acid on the proteins of the food is to simplify the molecule, digestion not being carried to the final or complete stage. The proteins are converted into proteoses, and a portion into peptone, which may be considered as more simple protein molecules. They correspond somewhat to the dextrins which are formed by the action of the saliva, which are intermediate products between the starch and the maltose, which is the end product of the salivary digestion. They are rather preparatory products which are still further simplified under the influence of the intestinal ferments. Peptone we now know is not the final end of protein digestion. The action of the pepsin is confined almost entirely to the stomach. As soon as the acid reaction is overcome by the alkaline juices of the intestine, the peptic activity is lost.

In diseased conditions of the stomach, where there is an absence of hydrochloric acid, the pepsin secretion is also practically nil. The digestion of proteids in the stomach, under such conditions, is also nil. If the motor functions of the stomach are preserved and the food does not fall a prey to bacteria in this locality, the digestion of protein under the action of the intestinal juices is normally completed.

The small intestine is the chief organ of digestion and practically the sole organ of resorption of the products of digestion. It is capable alone of maintaining the entire function of digestion, and under normal conditions over three-fourths of the chemical work of digestion is accomplished there. The food here comes in contact with three important secretions: the bile, the pancreatic juice and the succus entericus. The pancreatic juice and the succus entericus each contain practically complete sets of enzymes and are in a sense duplicate plants. The bile contains no enzymes but does contain certain activators and zymo-excitors.

There is an interdependency existing between the pancreatic function and that of the stomach and the small intestine, but the body has great power of adaptation, and when one part fails to do its work, as in the absence of the hydrochloric acid and pepsin, digestion of the proteins is perfectly accomplished by the action of the pancreatic secretion and the succus entericus. Under normal conditions the pancreatic secretion is greatly augmented by the stimulating effect of the acid stomach contents, but in the absence of this stimulus the work of digestion is satisfactorily accomplished. The pancreatic secretion contains three enzymes; an amylase, acting on the starches and disaccharides; a lipase, a fat splitting ferment; a trypsin, a proteolytic enzyme.

The amylase is much more powerful than that of the saliva, and completes very readily the digestion of the soluble starch. The lipase, or fat splitting ferment of the pancreatic juice, accomplishes practically the whole of the digestion of fats. It is secreted in an inactive form and is activated by the bile, the succus entericus and by bacterial action. The action of the bile as containing a zymo-excitor is very well exemplified here. When there is obstruction to the entrance of the bile into the intestinal tract, the stools contain a large amount of undigested fat and are white in consequence. The succus entericus, also contains a lipase of some importance.

The albumins under the influence of the trypsin of the pancreatic juice, and the proteolitic ferment of the succus entericus, are completely hydrolyzed and the molecule is reduced to a much smaller size than under the action of the pepsin. Since the albumins of the blood are of a different character than those of the food it is quite probable that the analysis of the proteins under the process of digestion must be very complete and that a synthesis occurs after absorption.

The succus entericus contains eight ferments. All of the different digestive activities can be carried on by the ferments of this secretion. Its function seems to be that of completing the digestion of any material whether it belongs to the carbohydrates, fats or proteins, which may have escaped the other digestive secretions.

Nature has endowed us with a wonderful chemical laboratory, which is able to take the material which we ingest as food and properly prepare it for absorption, and in such form as can be readily used by the body, either as material to replace lost constituents or to be burned so as to produce heat or energy.

In the intestinal tract carbohydrates are converted into maltose and into dextrose, the latter probably before the blood stream is reached; the fats into fatty acids and glycerin, and the proteins into albumoses, peptones and later into the simpler forms of protein, as lysin, arginin, histidin, Monoamino acids, tyrosin, phenylalanin, tryptophan, leucin, glycocol, alanice, aspartic acid, gutamic acid and amidovalerianic acid.

Taylor[1] has classified the disturbances of function of the alimentary tract which may permit of possible pathological variations, as follows:

"Disturbances due to improper methods of mastication."

"Disturbances due to toxic or otherwise injurious ingesta."

"Disturbances due to anomalies in secretion of digestive juices."

"Disturbances due to abnormalities in motor functions."

"Disturbances due to qualitative deviations in the chemical reactions of the process of digestion."

"Disturbances due to quantitive variations in the chemical reactions of the digestive processes."

"Disturbances due to bacterial infections and reactions within the tract."

It will be impossible to discuss these causes in any but a very brief way. Imperfect mastication usually allows of imperfect insalivation of the food and, leaving the food in large masses, renders it more or less difficult of solution and impervious to the action of the digestive juices. The action of the ptyaline of the saliva would be very slight, but as the enzymes of the intestinal juice would probably make up for this, it would be considered of little importance. Probably the most unfortunate result of imperfect mastication is that the psychic stimulation of the gastric secretion, which is greatly augmented by thorough mastication, would be seriously interfered with. Again, the food being in large masses, it would more readily fall a prey to bacteria.

The ingestion of toxic articles of food is so thoroughly understood that it needs no further comment here. Disturbance due to anomalies in secretion of digestive juices is a common pathological condition, but its discussion here would too greatly extend this paper, so it must be dismissed, though worthy of serious consideration.

Disturbance due to abnormalities in motor functions is of importance from the standpoint of intestinal toxemia, for this is largely responsible for stasis of the food contents in some portion of the digestive tract, which means that it favors the growth of bacterial products, the absorption of which may have a deleterious effect on the organism.

Disturbances due to qualitative and quantitative variations in the chemical reactions of the digestive processes together with defects in the process of resorption will not be discussed. This paper has to do chiefly with disturbances due to bacterial infections and reactions within the digestive tract.

Strictly speaking, the term "intestinal autointoxication" would indicate an intoxication due to the products of normal digestion. Aside from the anaphylactic phenomena occasionally met with where the product of digestion of certain proteins, such as egg albumin, seems to be the factor producing the phenomena, we have no reason to believe that normal products ever cause intoxication. The intoxication of intestinal origin results from absorption of the products of bacterial activity or infections, and should be spoken of as intestinal toxemias or intoxications.

The action of the intestinal bacteria on the food stuffs is very important. Their activity depends on a proper media and as a result of their activity we have their toxins to contend with. In the stomach the food stuffs, under normal conditions, are practically free from bacterial decomposition. When we have an absence of hydrochloric acid, we sometimes have a fermentation of the products of carbohydrate digestion, and throughout the digestive tract the bacteria have their most pronounced action upon the products of digestion rather than upon the undigested food stuffs. In cases of pyloric obstruction, with long delay of the food in the stomach, we have but little putrefaction, but quite marked fermentation. In the small intestine, because of the fact that peristalsis is very active and absorption rapid, we have but slight bacterial activity. When we have ileal stasis, as frequently results from a Lane's kink, or adhesions about the ileo-cecal valve, we have more marked evidence of putrefaction, as well as of fermentation. The upper part of the small intestines is more favorable to the growth of fermentative forms of bacteria, while the

1. Digestion & Metabolism p. 204.

lower portion allows of the development of the putrefactive forms. Since the aerobic bacteria are the ones producing putrefaction, and since the upper portion of the small intestine still contains some air that has been swallowed during mastication, this would account for the upper portion of the small intestine not being favorabe to putrefactive changes. It is in the colon that the bacteria, especially the putrefactive forms, thrive. Because of this the colon bears a very bad reputation; it is attracting of late even more attention than the appendix, and our surgical brethren have been endeavoring to help the situation by operations of short circuiting or even entire removal of that portion of the intestinal tract. It seems that the digestive processes that take place here are practically negligable and that absorption of the products of digestion in the small intestine have been nearly completed under normal conditions at the site of formation. Metchnikoff believes that the absorption of the products of intestinal toxins from this locality is responsible for old age, and practically all the other ills of human flesh. Its great function seems to be to furnish work for the doctors, for without the different forms of colitis and the constipation which affect so large a proportion of mankind, I fear our legitimate field of work would be decidedly lessened.

Not only upon the unresorbed products of digestion, but also upon the digestive secretions themselves, do the bacteria thrive. In fasting or starvation putrefaction does not cease, as evidenced by the appearance of the patient and the unmistakable signs of putrefaction found in the urine and feces. The digestive secretions contain protein in solution and they offer a remarkably satisfactory media for the growth of bacteria.

The action of the fermentative bacteria takes place principally in the upper part of the small intestine, but may extend throughout the small intestine and into the large bowel. The products of fermentation are fatty acids and alcohols, lactic and succinic acid, and the evolution of carbondioxide, methane, hydrogen and other hydrocarbon gases. These materials in the amounts formed are not sufficiently toxic to warant any great attention. No doubt at times the caloric value of the carbohydrate is considerably lessened by these chemical changes, but this is not of any serious importance. The fats are somewhat resistant to bacterial decomposition in the intesinal tract, and when they suffer decomposition the resulting products are not very injurious to the body. Combe[2] calls attention to the fact that their presence in excess favors the putrefactive changes in the proteid.

It is quite generally agreed by physiologic chemists that toxic bodies result from the action of the bacteria in decomposing the protein substances. These materials that lend themselves readily to decomposition are the products of protein digestion, and the intestinal secretions. While it is possible for the native proteins to suffer decomposition by bacteria, they are much more resistent than the more simple forms, resulting from the digestive activity.

As a result of the bacterial decomposition of tyrosin, phenyl-alanin, tryptophan and histidin there are formed bodies whose toxicity is definitely known and which, under favorable conditions, must have serious consequences. Tyrosin is broken down into paracresol and phenol. Tryptophan is converted into indol, indolacetic acid and skatol. After absorption these products are carried to the liver, and in part are conjugated with sulphuric acid derived from the disassociation of albumins. The phenols form sulpho ether acids, the phenol sulphunes and cresolsulphuric acids. The indol is chiefly derived from tryptophan and the amount found in the urine does not so much depend on the degree of intestinal putrefaction as on the amount of tryptophan which depends on the character of the diet, and the degree of resorption as well as the character of the intestinal flora. It is therefore very difficult to determine the degree of intestinal putrefaction. An analysis of the urine for indican is not a certain criterion as indican is only one of the aromatic bodies resulting from the activity of putrefactive bacteria. An analysis of the total ethereal sulphates is a better guide, but even then we have three factors that may modify this result: The character of the diet; the intestinal flora; and the factor of resorption.

While we can demonstrate the formation of phenols, indol, and skatol, as a result of intestinal activity of proteolytic bacteria acting on the products of digestion and on the digestive secretions, is it possible for us to prove that they are injurious to the body? Do those cases that exhibit considerable amounts of these bodies in the stools and urine, suffer any inconvenience from their absorption? It is scarcely necessary to demand experimental evidence to prove this. Every physician has observed

2. Autointoxication. p. 249.

this clinically in numerous cases. If this is not the case why are we so anxious to avoid constipation? Why do patients come to us complaining of loss of appetite, furred tongue, fetid breath and headache and of their own volition, having in mind former experiences, ask for something to clear out their intestinal tracts? Why is it that so many chronic invalids, in whom it is impossible to determine any organic trouble, make such marked improvement when attention is given to relieving their intestinal stasis? And why do we find a marked decrease in the indican of their urine as they show signs of improvement?

Von Noorden[3] describes very beautifully a condition ordinarily termed neurasthenia, but which is especially of interest because along with the nervous symptoms there is a decided polyneuritis, and this he claims is due to intestinal intoxication, and is relieved by measures that will overcome the chronic constipation which is of the spastic type. This condition is also described by one of his pupils, Dr. Eppinger, as vagatony, because of the decided vagus irritation. These investigators conclude that this results from toxic material absorbed from the intestinal tract, because the indican is increased from a normal of 20 mgs. to 50, 80 or even 100 mgs. and also since Eppinger has been able to extract a poisonous substance from the stools, which in animal experimentation produced similar symptoms.

Herter[4] has also cited many examples where it seemed to be proven beyond doubt, as a result of experimentation, that indol exerted a toxic effect on the organism. Crile also shows that skatol has the same effect on the brain cells as does shock, bacterial toxins, etc.

The question naturally arises: Why is it that all cases exhibiting increased amounts of indican and ethereal sulphates fail to reveal symptoms of intoxication? Probably this is so because of the fact that the body is endowed with the ability to protect itself against the untoward action of these toxic products. Combe[5] describes a triple line of defenses surrounding the intestinal tract. The first line of defense being the intestinal mucosa, which protects by its secretions which have a restraining effect on the intestinal bacteria, the bacterial toxins are in some way rendered harmless by them for an equal amount of toxin administered by mouth and by way of the portal vein; in the first instance the toxic symptoms were much less than when injected into the portal vein. But it is quite well demonstrated clinically, as in obstruction of the intestinal tract, that when the intestinal wall is in part denuded of its mucosa, the toxemia is very much more apparent.

The second line of defense is the liver. Here it is that the indol, skatol and phenols are conjugated with the sulphuric and glycuronic acids to form products that are very slightly toxic compared with their antecedents. No doubt the liver has to bear the brunt of the attack and it is only because of its ability to form less harmful products of those intestinal toxins that the body is so immune from harm. It has also been demonstrated that it retains a part of the phenol and indol which is not conjugated. Schupper[6] is authority that the liver exerts, owing to the biochemic activity of its cells, a marked toxicolytic action on toxins and alkaloids. He demonstrated that the toxicity of the alkaloids—atropine, pilocarpine, cocaine and apomorphine, was reduced 50-75 per cent. Combe has worked out a urotoxic coefficient which was demonstrated by experiment on animals, both before and after ligation of the portal vein, and the conclusion is that the toxicity of the urine is proportional to the degree of hepatic insufficiency.

The third line of defense he considers to be the glands of internal secretion: The thyroid, the suprarenal and the pituitary body. From our more recent knowledge, we are certain that they do exert some antitoxic action, as evidenced in the absence of their function in diseased conditions.

It seems, then that the body is well fortified against harm from the action of toxins of intestinal origin; and probably symptoms of intestinal intoxication result as frequently from the body losing its power to cope with what might be considered a normal amount of these materials as from an excessive formation of them.

THERAPEUTICS OF INTESTINAL TOXEMIA.

In the treatment of this condition our efforts must be directed chiefly toward limiting the putrefactive processes of the intestinal tract. This can be accomplished in five different ways:

1. The selection and ingestion of food that is freed from contamination with putrefactive bacteria.

3. Jour. of A.M.A., Jan. 11, 1912.
4. Bacterial Infections of the Intestinal Tract.
5. Autointoxication. pp. 72 etc.
6. Ball d. Acc. Roma. XIX, p. 5.

2. The proper preparation of the food for prompt digestion.

3. The selection of a menu that will not furnish an excess of protein material.

4. By preventing abnormal stasis of the intestinal contents.

5. And by controlling the intestinal flora so that the putrefactive bacteria are reduced.

Very frequently the intestinal putrefaction is greatly augmented because of the fact that we ingest food that is already thoroughly contaminated with putrefactive organisms. While the hydrochloric acid of the stomach inhibits these putrefactive changes in the upper part of the alimentary canal, nevertheless, it is not of sufficient concentration to destroy them. Under such conditions we have a more intense bacterial decomposition of the proteins, with the resultant toxic products, which are very injurious to the body. Flesh foods are very prone to decomposition, and inasmuch as the refrigeration of these foods is not always what it should be, in a great many cases they are used for food when in an advanced stage of putrefaction. The great time which elapses between the slaughter of the animal and the time it is served for food is very favorable to such a condition. The same is true of eggs and canned foods. Thorough cooking would probably destroy these bacteria, but probably would not markedly influence the toxic material already formed. But since it is the habit of a great many people to have their flesh foods served almost raw, we cannot believe that sufficient heat has been applied to these foods to thoroughly disinfect them.

As to the proper preparation of food for prompt digestion, this depends largely on thorough mastication. Food which is swallowed in large masses is very resistant to the action of the intestinal juices and is very apt to escape the activity of the juices of the stomach and of the small intestine and to reach the colon still quite unaffected by the digestive processes. Under these conditions, and as there is practically no check to the action of the putrefactive bacteria in the large intestine, these organisms find favorable conditions for great activity.

In controlling the intestinal putrefaction, a very great deal depends on the proper relation of fats, carbohydrates and proteins. A diet which is poor in carbohydrate material but contains an excess of protein, offers itself very readily to putrefactive decomposition. An excessive amount of protein in the diet, probably is more responsible than anything else for intestinal toxemia. We have been accustomed to prescribing diets which contain 100 grams of protein, or more, per day. In the diet of the ordinary individual who is living at hotels, where meat foods are in great preponderence on the menu, 150 or 200 grams may be used per day. The matter of protein intake has received considerable attention of late, and it has been found that so large an amount of protein is entirely unnecessary. Chittenden, in his experiments, found that from 50 to 60 grams of protein was an ample amount; nitrogenous equilibrium was easily maintained with this quantity. Taylor,[7] recommends that seventy grams is sufficient for all conditions. If it is necessary to increase or decrease the total calories of the diet, this should be done by the regulation of the fat and carbohydrate-energy producing elements, which are very much more advantageous for the production of body heat and energy than protein. An excess of 70 grams of protein means that we are obtaining a portion of our energy and heat from this form of fuel, which is the most expensive form, and which is very apt to be injurious because of its decomposition in the intestinal tract, also because after absorption it imposes an excessive amount of work on the oxidizing and excretory organs. Carbohydrates and fats do not lend themselves to the production of intestinal toxemia. While they may give rise to excessive fermentation in some intestinal disorders, nevertheless, they are very slightly injurious compared with the toxic substances elaborated during the digestion of the proteins.

Intestinal putrefaction is favored probably by abnormal stasis of the intestinal contents at some portion of the canal. Constipation, which so universally afflicts the American people, is an example of abnormal stasis. When the stasis is in the lower part of the ileum it decidedly promotes intestinal putrefaction and absorption of these toxins, as the small intestine is the organ of resorption. In the most marked examples, abnormal stasis is found in the colon. In all forms of spastic constipation, where the spasm affects the pelvic and iliac portions of the descending colon, the intestinal contents accumulate in the cecum and the traverse colon, where they are held for many hours longer than they normally should be.

To relieve perfectly this condition is one of the most difficult things which the physician is called upon to do. In most instances, when a patient complains of constipation, the temp-

7. Digestion and Metabolism. p. 498 and following.

tation is strong to resort to laxatives of some character, and as a result we see the shelves of our drug stores filled with all sorts of remedies which are supposed to be safe cathartics. The habit of resorting to cathartics for the relief of constipation is probably more than any other one thing responsible for the chronic ailments of today. Unfortunately constipation is not cured by the relief of cathartics which generally produce their effect by irritation, and the longer they are used the more the general nutrition of the individual suffers, and the more difficult it will be finally to relieve the constipation. Von Noorden[8] makes the statement that one cannot expect a definite cure of intestinal toxemia until the intestine performs its function properly upon the average diet, and until the entire lower section of the intestine has been completely emptied. In accomplishing this purpose he states that he uses practically no laxative or other drugs, but that the best results are obtained in a purely dietetic way. Purgatives, including the enema, only hide the effects of constipation and retard its definite cure. In many cases all that is necessary is to change the diet so that it shall contain a sufficient amount of coarse foods to provide proper bulk; but if the disease has progressed so far as to produce very marked irritation of the colon, it may be that the bulky foods will be very poorly borne; and it is especially true that every such case is a law unto itself and finds relief only after patient and continual experimentation. There is no specific line of treatment which will relieve such conditions.

At the present time two remedies are being used with considerable success in relieving constipation, one of them being a refined paraffin oil, which is supposed to have no rritating or injurious effect on the intestinal tract, and the other is the Japanese seaweed, agar-agar. These remedies with careful regulation of the diet, according to the needs of the specific case, combined with the use of massage, manual movements, and hydrotherapy, constitute probably the most advantageous line of treatment.

It is possible to do much toward limiting the development of the anaerobic bacteria which are responsible for the putrefactive changes. It has been found that they do not thrive well in the presence of organic acids which result from fermentation; also that the lactic acid produced in the souring of milk has a very decided inhibitory effect. The investigations of Metchnikoff have greatly encouraged the use of soured milk preparations. He claims these preparations to be practically a specific; but unfortunately not all cases are able to use the milk preparations, and while in many cases their use is advantageous, they fall short of being a panacea. Combe, in his work on Autointoxication, lays great stress on the use of carbohydrate material, particularly the cereal starches. Hirshling[9] found that by mixing the proteins with cereal flours and artificially digesting them in an incubator, no aromatic bodies were formed, even after six days. It was also found that cane sugar had a decidedly inhibitory effect. While Combe may be a little over-zealous he no doubt deserves credit for having called attention to a very importantpoint.

It has also been found that the intestinal flora can be changed somewhat by introducing the fermentative bacteria, or those which, acting on the carbohydrates produce organic acids. Hence, we have various preparations containing the Bacillus Bulgaricus and others which no doubt have a favorable effect.

As to methods of stimulating the glands of internal secretions, our knowledge is still quite imperfect. Organotherapy is receiving considerable attention and probably along these lines something will be accomplished which will be of value. When these glands have lost their ability to aid the liver in destroying absorbed toxic material we know at present no very reliable way to correct their insufficiencies.

The therapeutics of intestinal toxemia is still unsatisfactory, but we are making some progress and its seems probable that in the near future we shall know better how to protect our bodies from the toxic products absorbed from the intestinal tract.

8. Jour. A.M.A., Jan. 11, 1913. p. 104.

THE DIFFERENTIAL DIAGNOSIS BETWEEN FUNCTIONAL AND ORGANIC HEART MURMURS WITH ESPECIAL REFERERENCE TO LIFE INSURANCE.

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In his classical work on "Diseases of the Heart" McKenzie states:

"So deep an impression have murmurs made in the minds of the profession that a large proportion deem them invariably an evidence of an unhealthy heart; the result of which is that we find every form of murmur looked upon as an evidence of

9. Zeits. f. Phys. Ch. X. p. 306.

impairment, if not of disease. It is true that many physicians recognize and acknowledge that some functional murmurs may be harmless, but when they attempt in their writings to deal with this problem, their words convey so confused an impression, that it is evident they have but a hazy conception of the manner in which a harmless functional murmur is to be distinguished from a murmur which may be an indication of, or associated with, heart failure.

"Murmurs may be a physiological and normal sign and indicate no impairment of the heart's efficiency, nor foreshadow the oncoming of heart failure.

"I wish to insist upon this fact, for the possibility that a healthy heart may present a murmur is so opposed to the views of a great many of the profession, teachers and practitioners, that much harm is done to people who have to be examined for life insurance or for entrance to the services."

That life insurance companies are beginning to recognize the correctness of these views is shown by the acceptance of the following risks recommend by me to one of the oldest and most conservative companies during the past year:

CASE I. Mr. D. Loud mitral systolic murmur over the mitral area, rather definitely circumscribed. Can be heard a little to the left of the heart and as high up as the pulmonary area. When quiet the murmur follows the first sound, being nearer the first than the second. During this time the first sound can be distinctly heard. After exercise the murmur becomes merged with the first sound. The p m. i. is in the fourth interspace, an inch and a half inside the nipple line. Percussion shows the left border of the heart to be at least one inch within the nipple line. No hypertrophy of the heart present. No symptoms of heart incompetency. The murmur is not affected by inspiration or expiration, by sitting down, lying down or standing up, excepting that exercise of any kind makes it louder. Accepted.

CASE II. Mr. P., aged forty. Pronounced systolic murmur over the precordial area which disappears entirely at the end of deep inspiration when lying down. Audible at the end of expiration. Its intensity varies from one moment to another and at times it cannot be heard at all, especially when lying down. No accentuation of second sounds at base. Has never had any acute infectious disease such as rheumatism or "grippe," which might have caused endocarditis; the point of maximum intensity of the apex in the fifth interspace and at least one inch inside the nipple line. Accepted, although he had been rejected by several companies.

CASE III. Mr. S. Fairly loud mitral systolic murmur; heart normal in size. No accentuation of second sounds at base. No history of infectious diseases. The chest walls are thin and the respiratory sounds much louder than usual. Accepted.

CASE IV. Mr. T. D. Very loud systolic murmur. On deep inspiration the murmur diminishes very much in intensity and on deep expiration it becomes much louder. When lying down the point of maximum intensity is in the second or third left interspace, next the sternum. When standing erect it is less pronounced than when lying down and is most intense over the apex beat; but when leaning forward the murmur becomes most intense over the pulmonary area. The point of maximum intensity of the apex is one inch inside the nipple line in the fourt interspace. After exercise the murmur becomes much louder. Percussion shows the heart to lie to the right of nipple line and there is no dilatation or enlargement of the right ventricle, no accentuation of second sounds at the base. There is no hypertrophy of the heart nor have there ever been any symptoms suggestive of impairment of the heart's efficiency. Accepted.

CASE V. Mr. E. While lying down during quiet respiration there is a slight systolic murmur over the apex. This entirely disappears at the end of deep expiration but is faintly heard at the end of deep inspiration, in a sitting posture; part of the time it is not heard at all. On standing it is audible over the mitral area, in ordinary respiration. After hopping about a moment and then lying down the murmur is intensified, but still completely disappears at the end of deep expiration and reappears at the end of deep inspiration. P. m. i. in the fifth interspace, an inch within the nipple line. No accentuation of second sounds at base. No enlargement of the heart. No suggestion of secondary symptoms. Accepted, although previously rejected several times.

CASE VI. Mr. E. J. H. A very loud systolic murmur heard most plainly over the mitral area, but also heard more or less distinctly all over the front of the chest, all over the left side and under the left shoulder blade. Second sounds at base not accentuated. P. m. i. beneath the fifth rib three inches from the median line. Percussion does not indicate that the heart is hypertrophied. He looks well and has a good history. I think it is the loudest murmur I ever heard. In the absence of hypertrophy and secondary symptoms he was accepted.

The following is a typical report in a case of organic lesion:

CASE VII. Mr. B., aged 47; mitral systolic murmur of but slight intensity when quiet, but becoming much louder after exercise. Is conducted downward and to the left; p. m. i. directly below the nipple in the fifth interspace. Area of cardiac dullness considerably increased to the left. Cardiac impulse increased in force and area. Some hypertrophy of the heart present. No secondary symptoms. Never had rheumatism, but two years ago was in bed ten days with the "grippe." Rejected, the hypertrophy of the heart showing that the murmur was organic in origin.

In order to ascertain the opinion of life insurance companies on these important questions, I recently sent a *questionaire* to the medical directors of a number of the most prominent old line companies and received replies from twenty.

To my first question, "Do you accept heart murmurs of any kind?" Nine said "Yes" and nine said "No." Most of those answering

"Yes" added "if functional." One of those answering "No" gave as a reason "because men of that class do not have the same opportunity of reaching old age that a man does not affected."

In reply to my second question, "Is it possible by physical examination to differentiate between functional and organic heart murmurs?," fifteen answered "Yes" and five "No." One company said "not always." Another "yes, in many cases."

Some of the replies are worthy a more detailed statement as follows:

"I appreciate I am not in step with the profession when I assume a functional murmur is nearly as rare as a Jew in an Irish graveyard. I do not believe it is possible to differentiate between a functional and an organic heart murmur. Functional murmurs do not exist in life insurance. As soon as you take a functional murmur, you want to prepare for two mortalities."

"I do not believe it is possible for the majority of the average examiners to safely differentiate."

"If all our examiners were experts and able to differentiate between a functional and an organic disturbance of the heart, it might be safe to make the distinction. As, however, we cannot always have examinations made by skilful physicians, many of them being made by examiners in small country towns, we have been obliged to adopt the rule to either reject or postpone all such cases. In regard to your question whether it is possible by physical examination to differentiate between functional and organic heart murmurs, permit me to say that this is not always possible even with skilled examiners. There is no question clinically that what may be a functional murmur today may be an organic one in a comparatively short time."

"We do not accept risks with murmurs of any kind (if we know it) as we do not believe that we are able to pick the good from the bad. Personally, I do not believe it is possible by physical examination to differentiate between certain functional and organic heart murmurs and that the only sure differentiation is made by the subsequent history of the individual. If the murmur disappears permanently, the presumption is that it was a functional murmur. The burden of proof is on the applicant, and as long as he shows a heart murmur, we do not consider it safe to accept him."

"The mortality rate of risks with functional murmurs is greatly in excess of the normal. A large majority of them die from organic heart disease."

"We accept on a sub-standard plan risks suffering from mitral regurgitation, this being the only organic murmur we accept for any form of policy."

"Cases in which functional heart murmur is reported are not accepted unless we are acquainted with the skill of the examiner. We do think it is possible by physical examination to differentiate between functional and organic heart murmurs, but we are of the belief that the skill and experience and judgment required is possessed by a minority of examiners for life insurance."

"I believe from a clinical standpoint that it is possibly by physical examination to differentiate between a functional and an organic heart murmur, but for practical life insurance work it is not always wise to do this."

"If a 'good' examiner in the field reports a heart murmur, we consider it organic and decline the risk. We have, however, certain examiners throughout the country who we believe are quite as well trained in physical examination as we ourselves and whose opinion we accept as final in these cases. If there is any doubt in our minds, we give the company the benefit of the doubt.

"We think it is quite possible in many cases to differentiate between a functional and an organic murmur. We find a great many so-called cardio-respiratory murmurs which we believe are functional and do not affect the risk. Certain pulmonary systolic murmurs which come to our attention we also consider functional.

"We follow Osler quite carefully in our determination of heart conditions. I do not believe we are frequently taking cases which are organic in origin, but I do believe we very frequently, in protecting the best interests of the company and to be on the safe side, turn down heart risks that might be safely taken. It is always better for the company, however, to be conservative in this class of risks."

My own experience in dealing with both life insurance companies and members of the medcal profession is such as to lead me to believe that McKenzie is right when he says the profession has long looked upon cardiac murmurs as an evidence of diseases of the valves; and although it has long been known that in many cases which showed systolic murmurs during life, the valves were found intact at the post mortem examination, functional murmurs are still considered by many to be evidence of impairment of the heart's efficiency and as such call for treatment during the life of the individual.

It behooves us, therefore, to get a clearer idea of the difference between organic and non-organic heart murmurs. In order to do this we must first have an accurate knowledge of the signs and symptoms of lesion due to damaged valves.

We must always remember that murmurs are only guide posts which point out the way one is to look. There are other evidences which must be found before a diagnosis of valvular disease can be made. For instance, a systolic murmur however loud, of maximum intensity at the apex and propagated to the axilla, does not necessarily indicate incompetency of the mitral valve. Osler says there are heard in this region

a large group of what are termed accidental murmurs the exact nature of which is still doubtful. They are probably formed in the ventricle and are unassociated with hypertrophy or accentuation of the pulmonic second sound.

To diagnose mitral incompetency three conditions must be present:

I. A systolic murmur with maximum intensity at the apex which is propagated to the axilla and often heard at the angle of the scapula.
II. Enlargement of the heart.
III. Accentuation of the second pulmonic sound.

A common mistake is to diagnose aortic stenosis from the presence of a systolic murmur with its area of maximum intensity in the aortic area. Such a murmur may of course mean stenosis of the aortic orifice. But aortic stenosis is exceedingly rare and not once in a hundred times does a basal systolic murmur mean stenosis. The murmur may be due to other causes, such as thickening of the valves from arterio-sclerosis, dilatation of the aorta just above the valve, or anemia.

Aortic stenosis is one of the hardest of valvular lesions to recognize and before the diagnosis can be made, we must usually find:

I. A systolic murmur of maximum intensity at the aortic area.
II. A systolic thrill in or near the second right intercostal interspace.
III. Absence of the second sound which is produced by closing of the valve which cannot take place because they have become thickened and stiff.
IV. Hypertrophy of the left ventricle.
V. "A slow pulse of moderate volume and fairly good tension."

The murmur of anemia which may sometimes be mistaken for aortic stenosis is rarely so intense and is not associated with a thrill or with hypertrophy of the left ventricle.

Babcock states that the pre-systolic murmur of mitral stenosis is one of the two "truthful murmurs," the other being that of aortic insufficiency. These always give reliable information. All others will deceive on every possible occasion. The more trustworthy of the two is probably the pre-systolic murmur. It may be present one day and absent the next. I have seen Osler search for it four days in succession before finding it. It is a rough, harsh murmur leading up to and terminating in the first sound, which is short, sharp and more snappy than usual. It is best heard at the point of maximum intensity of the apex beat, or a little above it, and over a very limited area. This is one of the most important points in its differentiation. The second sound in the second left interspace is loudly accentuated and often reduplicated as is also the second sound at the apex. The murmur is usually accompanied by a fremitus or thrill which "can be felt to terminate in a sharp, sudden shock, synchronous with the impulse. This most marked of physical signs is pathognomonic of narrowing of the mitral orifice and is perhaps the only instance in which the diagnosis of a valvular lesion can be made by palpation alone. The right ventricle is hypertrophied, the pulse small and often irregular." (Osler.)

The next most reliable murmur is that of aortic regurgitation. This being a diastolic murmur should never be mistaken for a functional one. Important points which should prevent the making of such a mistake are the characteristic collapsing, Corrigan pulse, the greatly exaggerated pulsation of the arteries, the increased capillary pulsation, the enlarged area of cardiac impulse, the presence of the apex beat in the sixth or seventh interspace and to the left, and the greatly increased area of heart dullness.

One of the most important and constant findings in cases of murmur due to organic lesions is enlargement of the heart. But valvular lesions do not *always* lead to hypertrophy. It depends upon the character of the lesion and the general condition of the individual. "It is possible to have a valvular lesion at the aortic or mitral orifice without compensatory hypertrophy, but this is rare." (Councilman. Private communication).

Warthin is also of the opinion "that valvular lesions do not always lead to hypertrophy. This depends upon the severity of the lesion and also upon other general conditions of the circulation. It is, however, very rare, for a valvular lesion of long standing and of any great degree of severity, at either the aortic or mitral orifices, to exist without more or less compensatory hypertrophy." (Private communication).

Cabot is of the opinion that mitral and aortic lesions almost always lead to hypertrophy, but that it cannot always be recognized during life. The enlargement may not occur towards or against the chest wall, but backward or downward against the liver.

Hypertrophy he says may be due to:

(a) Increased arterial resistance,
(b) Valvular lesions,
(c) Myocardial changes,
(d) Adherent pericardium,
(e) Thyroid intoxication (Graves' Disease),
(f) Unknown causes. (Many cases).

Cotton, of Montreal, is of the opinion "that while valvular disease is *usually* followed by hypertrophy, this does not *necessarily* take place." (Private communication).

He does not believe, however, that cardiac hypertrophy is as a rule dependent upon disease of the valves. Too much stress is laid upon valvular disease and not enough upon disease of the myocardium which is the great sufferer in acute rheumatism. He believes that hypertrophy is usually the measure of the degree of muscle invasion and that symptoms are of more value than physical signs. Inasmuch, however, as valvular disease is *in the vast majority of cases* followed by hypertrophy, and as this is one of the important marks of differentiation between functional and organic murmurs, the recognition of hypertrophy becomes of great importance.

Displacement of the apex beat downward and to the left is an important sign of cardiac hypertrophy. In healthy adults the apex beat is usually felt in the fifth left intercostal space immediately inside the nipple line. It may be in the fourth interspace and outside the nipple line in children and some adults. (McKenzie).

In diseases of the heart the situation of the apex beat is altered with the increasing size of the heart. A diagnosis of hypertrophy should not be made merely from a displacement of the apex for this may be due to other causes than hypertrophy, such as adherent pleura, fibroid tuberculosis, pleural effusion or pneumothorax. Neither should it be made from an increase in the *area* of pulsation, for here again the cause may be extrinsic to the heart. It should be remembered that the only *pathognomonic* sign of hypertrophy of the left ventricle, as far as the apex beat is concerned, is *increased* force of the beat (Price).

A large diffuse apex beat with a forcible, thrusting, heaving impulse during ventricular systole is characteristic of hypertrophy of the left ventricle. When the apex beat is diffuse, but the impulse diastolic in time, it indicates enlargement due to hypertrophy or dilatation of the right ventricle.

Cabot states that the determination of the transverse dullness at the level of the fourth interspace, and the location of the apex beat, give on the whole the best evidence of the size of the heart. When the apex beat is faint or absent it is of great importance to accurately percuss the left border of the heart. In case the apex beat cannot be located with the patient on the back, it is well to test the impulse with the patient lying on the left side. In some cases the presence of an apex beat in the sixth interspace, which is a space below where it should be, can be recognized only with the patient in this position. If the apex beat is felt in the sixth interspace it is valuable evidence of enlargement of the heart. It must not be forgotten, as Cowan states, "that in healthy individuals the apex beat is freely movable, and may be felt even a couple of inches outside its usual site if the individual lies on his left side."

The most common symptoms of organic cardiac disease are undue breathlessness or fatigue on exertion, palpitation, precordial distress or pain, and a sense of tightness across the chest on or after exertion. Breathlessness on exertion is one of the most important symptoms but is also a symptom common to many affections besides heart disease. Palpitation is not a reliable sign of heart failure, as it may occur for instance in neurotic people and is often reflex in origin. While pain in the precordium is a frequent symptom of cardiac failure, it often occurs in functional heart affections and is frequently absent in organic disease. The most characteristic feature in pain due to heart disease is that it is brought on by exertion, though it may not appear until some hours later. (Price).

Functional or accidental murmurs may be heard in any situation over the heart, but are most frequent in the pulmonic and mitral areas. All authorities agree that they are usually systolic in time. Cabot states that the majority of all murmurs heard over the heart are unassociated with valvular disease and that 99 per cent. of functional murmurs are systolic. The majority of them are usually heard with maximum intensity in the region of the pulmonary valves where Osler says murmurs are extremely common but valvular lesions exceedingly rare. This is a favorite situation for cardio-respiratory and anemic murmurs. "All thin-chested persons, all young children, almost any person after great exertion, any child with a little fever, may have a systolic murmur in the second left intercostal space." It is an every day affair, and in the absence of secondary signs or symptoms it should not be difficult to differentiate a functional murmur in the pulmonary area from one due to valvular disease.

Drummond divides non-organic murmurs into three classes—anemic, cardio-muscular and cardio-respiratory.

Cabot divided them into functional, which he

says are especially apt to be associated with anemia, and cardio-respiratory.

The murmurs of anemia may be heard at any orifice, but are usually heard at the second or third left interspace. They may also be heard at the apex, at the aortic cartilage and over the tricuspid area, but are comparatively infrequent in these situations. They are soft in character and low in pitch. They are louder in the recumbent than in the upright position; their loudness is increased by violent cardiac action; they are loudest just at the end of expiration or beginning of inspiration; they are not transmitted away from the heart, and they are systolic in time. They are associated with signs of enlargement of the heart or with accentuation of the pulmonary second sound.

Cardio-respiratory murmurs are fairly common. They are greatly affected by position and respiration. They are most marked in inspiration, especially at the end of the act; but may be heard in both inspiration and expiration. They are systolic in time and are loudest at the apex, but may be heard as high as the second rib, in the axilla and below the angle of the left scapula; but as a rule the area over which they are heard is very limited.

Functional murmurs are almost always systolic in time. By far the greater number of them have their point of maximum intensity in the pulmonic area; but they may be heard loudest at the apex, or over the middle of the sternum when they are supposed to be tricuspid in origin, or in the aortic area. They are as a rule soft and blowing in character, but so may be some organic murmurs which may resemble functional murmurs so closely in their character and propagation that it is not possible to differentiate one from the other by auscultation alone. A loud coarse murmur, whatever its other points of resemblance may be to functional murmurs, is likely to be organic, especially when persistent. Functional murmurs are not associated with any evidence of enlargement of the heart nor with accentuation of the pulmonic second sound. They are usually heard over a limited area, but are well heard to a little distance from the point of maximum intensity in all directions, and are not transmitted to the left axilla or to the back. In some cases functional murmurs appear only when the heart is excited or when the individual stands and disappear when the heart becomes quiet or the individual is at rest. Again, functional murmurs are found which are present when the heart is at rest and which disappear on exertion or excitement. (McKenzie).

Organic murmurs may occur at any period of the cardiac cycle. Functional murmurs are practically always systolic. Systolic organic murmurs are usually well propagated toward the left axilla and to the back or into the great vessels of the neck, especially upon the right side. They are often soft and blowing, occasionally coarse anl loud, sometimes musical. They are sooner or later associated with signs of enlargement of the heart, accentuation of the pulmonic second sound, as well as with signs and symptoms of stasis in other organs.

Under some circumstances it may be a matter of no small difficulty to differentiate between accidental and organic murmurs. If painstaking inquiry fails to elicit a history of acute rheumatism or any other infectious disease likely to have set up endocarditis, it furnishes some evidence of the non-organic nature of a murmur. This is strengthened if the patient is manifestly neurotic, anemic or chlorotic, or if there are digestive disturbances that are likely to produce disturbances in the nervous system. If by reason of the patient's excitability the heart is easily disturbed or there is a history of cardiac over-strain, if the patient is given to vicious habits, sexual excess of one kind or another (both masturbation and intercourse), over indulgence in tea, coffee, eating, drinking, etc., the conclusion is strengthened that the murmur is accidental. (Babcock).

As a general proposition it may be stated that functional murmurs are not accompanied by secondary changes in the size of the heart or by circulatory disturbances such as generally depend upon valvular disease. The great majority of anemic patients have a mitral systolic murmur and the second pulmonic sound may also be accentuated. It must not be forgotten also that in children up to the twentieth year of age the second pulmonic sound is frequently normally accentuated.

Some of the most important and valuable diagnostic points in differentiating functional from organic murmurs are contained in two of the answers to the third query of my *questionaire* already referred to: "How would you differentiate between functional and organic murmurs?"

"We accept risks who have what we believe to be cardio-respiratory and functional murmurs, if the trouble is very slight and without noticeable effect upon the applicant. We do not

believe it is always possible to differentiate between functional and organic murmurs. For this reason we give the company the benefit of any doubt.

"In favor of an organic lesion in doubtful murmurs are the following points:

I. Previous rheumatic or syphilitic history.
II. Hyperthrophy of the heart.
III. Murmurs increased by exercise.
IV. Murmurs transmitted to auxillary or scapular region.
V. Location, i. e., either at apex or base.
VI. History of duration for some years.
VII. Constancy, i. e., always present, not intermittent.
VIII. Does not disappear on changing position.
IX. Party is not anemic.
X. Chest is not deformed so as to cause pressure on the heart.

"In favor of the murmur being functional we would recognize;

I. Failure of the above signs.
II. When the murmur disappears on exertion.
III. When murmur is not transmitted.
IV. When heard over the area of the pulmonary valves.
V. When it is intermittently present.
VI. When it disappears on holding the breath and on changing the body position.
VII. When there is well marked anemia or a decidedly depressed sternum or the party is a tall, spare young person.

"We are doubtful as to the organic character of the lesion when the above signs are found.

"The question of cardiac murmurs is one of the most troublesome we have and one on which we find the widest difference in reports made by different medical examiners on the same case.

"We frankly acknowledge we make mistakes ourselves and are sure the best medical examiners will at times fail to find such murmurs as are distinctly heard on appeal to the home office.

"As a post mortem scarcely ever decides the real cause of these very slight heart murmurs which are the ones giving all the trouble, it is not likely the subject will be cleared up for some years to come."

"I think it is usually possible by physical examination to differentiate between functional and organic heart murmurs, though at times it is extremely difficult. I am a little skeptical about functional heart murmurs, at least as reported to life companies, for the reason that the mortality in large groups of these lives has been found to be decidedly in excess of the normal, suggesting that either there is considerable difficulty about distinguishing between functional and true organic murmurs, or if functional, that they express a lack of resistance to disease which has to be taken account of, at least as concerns their insurability as life risks.

"A murmur is probably functional which:

(a) Does not increase on exertion,
(b) Disappears at some time of the respiratory cycle.
(c) Disappears on change of posture,
(d) Is not transmitted,
(e) Is not accompanied by hypertrophy."

"Our basis for differentiating between organic and non-organic murmurs rests chiefly with the question as to whether the murmurs are heard constantly throughout the respiratory cycle. Where such is the case, the characteristics of the sounds being typical, we assume the condition to be caused by valvular defects and do not accept the risk.

"On the other hand, when at any phase of the respiratory act the heart sounds are clearly heard and the murmur is absent, it is assumed that the sound is due to some other cause than valvular disease and is of no significance from our standpoint, and we therefore accept these cases without hesitation."

McKenzie states that "the estimation of the significance of functional murmurs is not based on the murmur itself, but on the functional efficiency of the heart and on the presence or absence of other signs of cardiac affections, such as the size, rate and rhythm.

"If we find in a heart of normal size and rhythm a systolic murmur with absence of any sign that would indicate that it is definitely organic in origin, and with a good functionating organ, we may conclude that the heart is perfectly normal. If there be evidence of weakness or other signs of abnormal conditions present, then the opinion should be based on these other signs and not on the murmur."

REFERENCES.

1. McKenzie. Diseases of the Heart. 1913.
2. Osler. Principles and Practice of Medicine.
3. Babcock. Diseases of the Heart and Arterial System.
4. Cabot. Physical Diagnosis. 1912.
5. Price. Common Errors in the Diagnosis and Treatment of Cardiac Diseases. *British Med. Jour.*, August, 1914.
6. Cowan. Diseases of the Heart. 1914.
7. Lewis. Clinical Disorders of the Heart 1914.

8. Norris. Blood Pressure. Its Clinical Applications. 1914.
9. Warthin. Private communication.
10. Councilman. Private communication.
11. Cotton. Private communication.
12. Wilson. Medical Diagnosis.
13. Medical Directors of the following Life Insurance Companies:

Security Mutual, Binghampton; Equitable, Des Moines; John Hancock, Boston; New England Mutual, Boston; Union Central, Cincinnati; Travelers, Hartford; Phoenix, Hartford; Equitable, New York; Penn Mutual, Philadelphia; Mutual Benefit, Newark; New York, New York; Mutual, New York; Penn Mutual, Philadelphia; Mutual Benefit, State, Indianapolis; Reliance, Pittsburg; Fidelity Mutual, Philadelphia; Pittsburg Life and Trust Company, Pittsburg; Michigan Mutual, Detroit; Connecticut Mutual, Hartford.

PROPAGANDA FOR REFORM.

Waterman's Tonic Restorative.—Examination in the A.M.A. Chemical Laboratory showed this "epilepsy cure" to be a bromid mixture, containing bromide equivalent to 17.6 grains potassium bromid per fluidram. The recommended daily dose of five teaspoonfuls corresponds to 88 grains potassium bromid. Caring little for the health or safety of those who use the nostrum, the promoters advise an increase dosage if required "to stop the 'Fits,'" thus leaving the dosage with the user, who is assured that the nostrum is "safe" (*Jour. A.M.A.*, March 6, 1915, p. 847).

Dr. Kline's Nerve Remedy.—This "epilepsy cure" is sold by the R. H. Kline Company, 45-47 E. 20th St., New York City, this being the same address as that of the Lexington Drug and Chemical Company which sends out the waterman "epilepsy cure" (see above). Examination in the A.M.A. Chemical Laboratory showed this bromid mixture to be practically identical with Waterman's Tonic Restorative (*Jour. A.M.A.*, Mar. 6, 1915, p. 848).

Liquid Paraffin (Liquid Petrolatum).—W. A. Bastedo reports the results of a clinical investigation made under the auspices of the Therapeutic Research Committee of the Council on Pharmacy and Chemistry to determine the relative efficiency of the different preparations on the market. Three specimens were sent out: a heavy Russian liquid petrolatum a light Russian liquid petrolatum and an American liquid petrolatum—being distinguished only by number or letter. From extended trials in hospitals it is apparent that all acted alike. Only slight differences as to palatability were noted by some (*Jour. A.M.A.*, March 6, 1915, p. 808.)

Strychnin and Caffein as Cardiovascular Stimulants.—F. H. Newburgh has studied the effects of strychnin and caffein in acute infectious diseases. He finds that strychnin sulphate in medicinal doses does not increase the output from the heart, slow the pulse or materially raise the blood pressure. He concludes that there is no logical basis for its use as a cardiovascular stimulant. Further, he finds that caffein sodio-salicylate, in ordinary dosage, does not raise the blood pressure or slow the pulse. His experiments did not determine if caffein increased the blood flow (*Arch. Int. Med.*, Mar. 15, 1915, p. 458).

Colchi-Sal.—Colchi-Sal is sold by E. Fougera & Co., Inc., in capsules stated to contain the "active principle" of cannabis indica, colchicin, methyl salicylate and "appropriate aromatic adjuvants." It is recommended in "Gouty and Chronic Rheumatic Manifestations," "acute cases of Gout," "intestinal autointoxication or dyspepsia," "billious headaches," etc. The Council on Pharmacy and Chemistry found Colchi-Sal ineligible for New and Nonofficial Remedies because the indefinite character of the "active principle" of cannabis indica made its composition secret, because it was advertised indirectly to the laity, because unwarranted therapeutic claims were made for it, because the name does not indicate the habit-forming cannabis indica and because the composition was held unscientific (*Jour. A.M.A.*, March 20, 1915, p. 1016).

Neurilla.—To show how a practically worthless mixture may be exploited by means of ill-considered testimonials, the Council on Pharmacy and Chemistry publishes a report on Neurilla, apparently the sole output of the Dad Chemical Company. Neurilla, according to the manufacturer's claims, depends for whatever virtues it has on two generally discarded drugs, skullcap and passion flower, present in unstated amounts, "aromatics" and 20.3 per cent. alcohol. It is advertised as a "nerve tonic" and is said to be "A Valuable Aid in the Treatment of Fevers, Colds, La Grippe, etc." Inquiries sent to some of the physicians whose testimonials were used to promote Neurilla brought replies indicating these testimonials to have been given thoughtlessly and on insufficient experience. In most cases the writers stated that they had abandoned the use of Neurilla long ago (*Jour. A.M.A.*, Mar. 27, 1915, p. 1093).

TRANSACTIONS

OF THE

Clinical Society of the University of Michigan

Stated Meeting, March 10, 1915

The President, HOWARD H. CUMMINGS, M.D., in the Chair
Reported by REUBEN PETERSON, M.D., Secretary

THE EXTENT OF INSANITY AND FEEBLEMINDEDNESS AND THEIR CAUSES IN MICHIGAN.

ALBERT M. BARRETT, M.D.
Professor of Nervous Diseases and Psychiatry, University of Michigan.

There were in the Michigan institutions caring for the insane on June 30th, 1914, 7703 individuals.

Since 1905 the state has appropriated $12,327,259 for their maintenance in public institutions and for special purposes.

In 1905 the cost per capita to the population of the state was 37.74 cents.

In 1914 this had increased to 45.24 cents per capita of the state's population.

In Michigan the ratio of insane in institutional care is 27 per 10,000 of the general population. This ratio is about the same as that of states having the same general geographic position and less than in certain older states with larger facilities for caring for the insane.

There has been an increase of 145.2 per cent. of the insane in institutional care in the past twenty-four years. In large part this increase is due to an increase of institutional capacity.

There has been an increase of 43.7 per cent. in the total admissions to the Michigan state hospitals for the insane in the past fourteen years.

The annual admissions of new cases of insanity has increased 62.7 per cent. between 1901 and 1914.

The fact that the ratio of admissions estimated to 10,000 of the population has increased from 4.5 in 1901 to 5.9 in 1910 indicates that the character of the population has changed.

Between 1901 and 1910 the population has increased 16.1 per cent. and the annual admissions of new patients has increased 51.3 per cent.

The foreign born population furnishes a much larger proportion of the annual admissions to the state hospitals for the insane than does the native born. The ratio for 10,000 of foreign born being 8.9 and for native born 5.4.

Native born of foreign parents have a rate of admission 166 per cent. greater than the native born of native parents.

Of the foreign population Russia including Poland, Finland, Scotland and Ireland have a higher rate in relation to their numbers in the state than do other foreign nationalities.

The highest rates of admission are in districts having a population of 2,000 to 5,000.

All counties having large state hospitals for the insane have the highest ratio of admissions, in proportion to their population. It is supposed that fewer insane individuals in these counties escape commitment to institutions owing to their proximity and greater familiarity with institutional administration. There is reason to believe that the rate in these counties approaches the truer number of insane needing commitment than in counties having lower rates.

The counties of the upper peninsula have relatively higher rates in proportion to the population than those of the lower peninsula.

Insanity is most liable to occur between the ages of 30 and 39. The age of greatest frequency in Michigan has changed in the past twenty years from 25, to 35 to 40. Within recent years there has been a great increase in the proportion of admissions of individuals above the age of 50.

In general, males contribute a relatively larger proportion of insane individuals than do females. There has in recent years been a

relatively larger increase in the proportion of male admissions than females.

Alcohol is the direct cause of insanity in 8.4 per cent. of all admissions to Michigan state hospitals for the insane.

Alcoholic insanity is 6.5 per cent. as frequent in males as females.

Alcoholic insanity is relatively frequent among females, this sex contributing 13.2 per cent. of all cases of this disease.

Thirty-one and two-tenths per cent. of the insane are more than moderate in their use of alcoholic drinks.

Drug habits are productive of only a small proportion of the insane admitted to the state hospitals.

Syphilis is the cause of 12.9 per cent. of the cases of insanity annually admitted to the Michigan state hospitals. It was the direct cause of insanity in 17.5 per cent. of all males and 6.65 per cent. of all females admitted. Twenty-one and six-tenths per cent. of all insane have syphilis as shown by the Wassermann test.

The conjugal mates of 38.18 per cent. of all individuals having paresis have syphilis.

The mental status of 3,334 individuals resident in the seventy-nine county infirmaries in the state were studied by this Commission. Of this number two-fifths were either insane or mentally defective. There were 407 who were insane, 114 were epileptic, 710 who were feebleminded and eighty-one whose mental defectiveness was unclassified.

Of this group the feebleminded, both because of the largeness of their numbers and because of their excessive cost to the public are by far the most important. While the average term of residence at public expense, for each of the individuals of normal mentality in the county infirmaries was only 3.2 years, at a total cost for each individual of $552, the average term of residence for each feebleminded individual was 9.3 years, at a total cost for each individual of $1,419. The 710 feebleminded individuals now resident in our county infirmaries have cost the public for maintenance in these infirmaries over $1,000,000. One of the feebleminded individuals who is now a resident in a county infirmary of the state has, together with other members of the family, who also have been in county infirmaries of the state, have cost the public for their maintenance over $17,500.

The states and counties are themselves very largely responsible for this immense burden. Of these 710 feebleminded individuals nearly half were born in the state of Michigan. Moreover, of those who were born in the state 60 per cent. were born in the county which is now supporting them. This means that the state—even that the county—is very largely breeding its own feebleminded class.

This breeding is taking place by allowing those of defective mentality to marry and have offspring. In some instances, the county officials are even instrumental in bringing about such marriages. Cases of this shortsightedness were found by this Commission. In one such case, the county officials allowed the marriage of a feebleminded woman who only had the mentality of a child of seven and one-half years and who was sexually irresponsible, having already given birth at the county infirmary to an illegitimate child. This woman had been a county charge for three years and the county officials in order to escape a further cost of supporting her allowed her to be married from the county infirmary by a man of questionable mentality. They were too shortsighted to see that in a few years the county would have to support feebleminded offspring which will doubtless result from this union.

The number of feebleminded is also increased by the unmarried feebleminded woman of child-bearing age, when she is not properly segregated. Over 30 per cent. of the feebleminded women in the county infirmaries have given birth to illegitimate children. The high-grade feebleminded woman has strong sexual desires, but weak inhibitory powers. Consequently, as long as the state does not provide for their effective and permanent segregation, they will go on giving the state feebleminded children, which the state in turn will have to support. There were 137 women of child-bearing age in the county infirmaries. Most of these women are not effectively segregated and many of them are only temporarily in the custody of the county. There were on June 30, 1913, fifty women of childbearing age on the waiting list of the Lapeer Home and Training School. Until all these cases are permanently segregated, the state is menaced by them.

Moreover, there are continually being discharged from the Adrian Industrial Home for Girls those of childbearing age who are of defective mentality. Of the 386 girls in this institution who were examined by the investigators of this Commission 131 or 34 per cent. were feebleminded. These girls cannot be detained at the institution after they are twenty-one. They go forth—potential mothers of

feebleminded children. How many more millions of dollars their offspring and the offspring of the remainder of the feebleminded women who are not under permanent custodial care are going to cost the people of Michigan cannot be estimated. But if we do not want to pay millions tomorrow we must pay thousands today in order that this class may be placed in institutions where they will no longer be able to reproduce after their own kind.

The feebleminded girls at the Adrian Industrial Home also complicated the problem of the reformation and training of delinquent girls in the institution. This same statement may be made concerning the feebleminded boys at the Lansing Industrial School. One hundred and seventy-one, or 21 per cent. of the 809 boys examined at the institution were feebleminded. The feebleminded delinquent cannot be reformed. Placed in a reformatory institution he simply clogs the institution. He should otherwise be taken care of.

RECOMMENDATIONS.

In view of the facts shown in this report, the Commission makes the following recommendations:

1. In view of the excessive amount which the foreign population, in proportion to the numbers in Michigan, contributes to the insane and mentally defective class, it is urged that a more effective control and supervision be maintained by state and federal authorities.

2. In view of the fact that matters relating to the insane and mentally defective are essentially problems of the state as a whole, rather than the individual counties, it is desirable that the state maintain a more centralized control and supervision of all institutions having custody and treatment of the insane and those mentally defective or epileptics.

3. In view of the large and increasing number of discharged patients from hospitals for the insane who are continuing to live in unrecovered mental state outside of institutional care and in view of the absence of any contact between state institutions and the families of the insane and mentally defective, this Commission recommends the enactment of a law providing for the employment of a field worker by each institution and the continuance, by the institution, of a systematic supervision over those who have been discharged.

4. In view of the certain knowledge we possess, of the influence of syphilis in the production of insanity and physical and nervous degeneracy, it is urged that continued efforts be made towards bringing to public attention the dangers from this disease.

5. In view of the known influence which alcohol has in the production of insanity, and conditions of physical and nervous degeneracy, it is urged that the public be educated to an appreciation of the dangers of intoxicating drinks.

6. It is recommended that a law be enacted providing that no child be admitted to any of the state institutions caring for juvenile delinquents or dependents, without a mental examination being made by a competent person, and that provision be made for the employment at each of these institutions of a person specially trained for this purpose.

7. In view of the lack of any centralized statistical consideration of matters pertaining to the insane and mentally defective classes, the Commission recommends the enactment of a law requiring all institutions caring for these classes to furnish the State Board of Health such information as the Board may require concerning these classes and their relations to public health; that the State Board of Health continue the statistical investigation carried on by this Commission and that ample provision be made for this work and that the statistics be published by the State Board of Health in its annual report.

8. In view of the continued menace to the public health from the increase of the feebleminded and insane which is the result of the marriage of those who are insane or feebleminded or physically diseased it is recommended that a law be enacted making it obligatory that the name of each individual who may be cared for in a public or private institution in Michigan in which are treated or held in custody those who are insane, delinquent, dependent, mentally defective or epileptic, be filed in the office of the State Board of Health by the Superintendent or officer in charge of such public or private institutions. Such names shall be held in privacy. Before the clerk of any county in Michigan may issue a license for marriage, he shall submit the name of the applicant to the Secretary of the State Board of Health. If any information is in the official possession of the State Board of Health which shows that such individual has been adjudged insane or shown to be feebleminded, epileptic or afflicted either with active or latent syphilis or gonorrhea, the clerk shall be so informed and the license shall not be issued.

9. In view of the following facts:

First, That the laws prohibiting marriages of defectives are not enforced;

Second, That the sterilization act is infrequently used;

Third, That the expense of the remaining measure, segregation, may be decreased by its application to but one sex;

Fourth, That the feebleminded women play a more definite and tangible part in the problem of defectiveness than does the feebleminded man.

And in view of the fact that:

First, There are, at least 137 feebleminded women of childbearing age in county infirmaries, who are neither effectively nor permanently segregated;

Second, There are at least 131 feebleminded girls at the Adrian Industrial Home who are neither subjects for reformatory treatment nor desirable as mothers after their discharge;

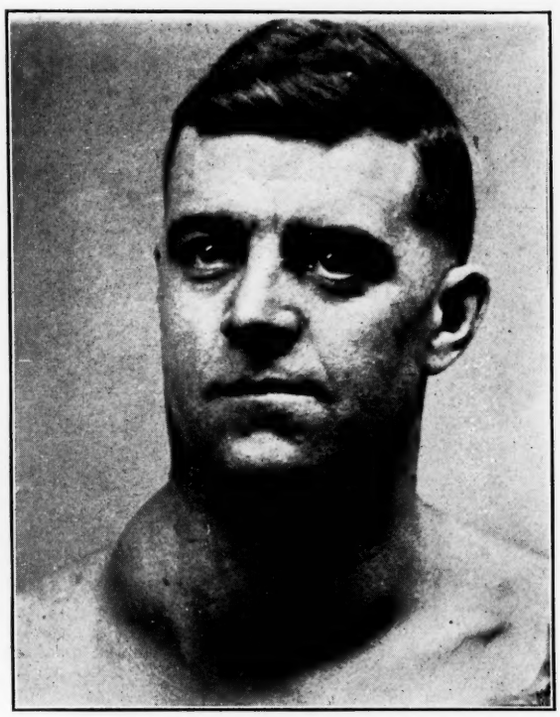
Third, There were, June 30, 1914, fifty feebleminded women of childbearing age on the waiting list of the Lapeer Home and Training School, whose full capacity is already reached.

We recommend that some adequate state provision be made either in the establishment of a special institution or by increasing the capacity of the Lapeer Home and Training School, for the custody of the feebleminded woman of childbearing age.

REPORT OF A CASE OF MEDIASTINAL TUMOR.

JAMES G. VANZWALUWENBURG, M.D.
(From the Clinic of Roentgenology, University Hospital, Ann Arbor, Michigan.)

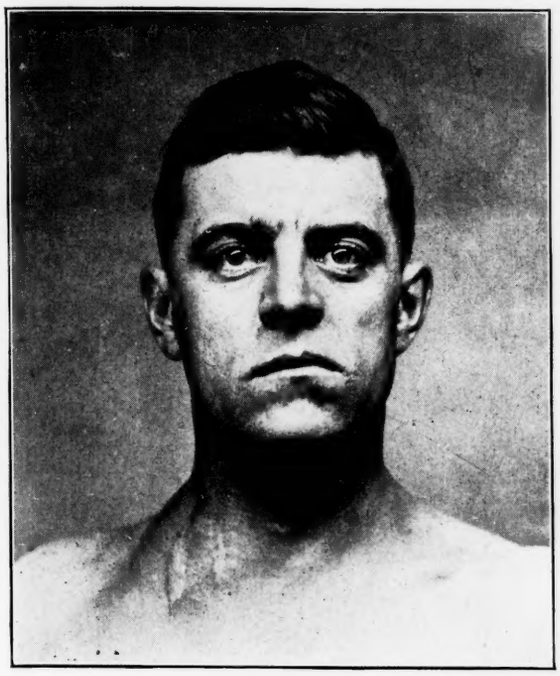
I wish by this case to show one of the incidents which may happen in the treatment of mediastinal conditions. This man came in last February for Hodgkins disease. His early history is interesting, although I can only briefly recount it. A gland in the neck was first discovered when he was four. It was removed and diagnosed as a fatty gland and the neck was cleaned out. The glands reappeared subsequently. Last year in February he came here for relief. A single gland was excised from the back of the neck. The pathologic report was Hodgkins disease with sarcomatous degeneration. He had a neck which was very much larger than at the present time, also some glands in the axilla. An X-Ray showed a small mass in the mediastinum. We found that there was no difficulty about tolerance and we gave him full doses. He remained in the Hospital for some time and finally went home and resumed his work. He holds a very responsible position in Detroit. He came in about once a month and was rayed. About August, a second radiogram of the chest was taken, showing that the mediastinal mass had become very much smaller. We were getting along so famously that two weeks ago when he was last here, I proposed that if he had no further difficulty he should stay away two months. Instead of that he turned up yesterday morning. He complained that he was getting short of breath, had to sit up at night, his neck and face were swollen, and he had severe paroxysms of coughing. We took another radiogram.



HODGKIN'S DISEASE.
Figure 1. Photograph, February 27, 1914, showing tumor in the right neck.

The circumstances are these. We have been very successful in keeping down the tumor in the neck, but for the last half year we have taken the intrathoracic conditions more or less for granted. I went on the assumption that unless he had symptoms the mediastinal conditions would take care of themselves, and that he would report any trouble. But the trouble when it appeared came very suddenly, until the man really is quite distressed. The situation now is critical. The extent of the mass is clearly evident on the plate, and you can

see that his face now is puffy. His neck is swollen. It is not a true edema, but it is quite distinct. You will notice the enlargement of



HODGKIN'S DISEASE.

Figure 2. Photograph, April 24, 1914, showing improvement in 8 weeks.

the vessels over his arms due to pressure upon the return circulation. His eyes are distinctly more prominent than they were before, and his voice is somewhat affected.

This case presents a rather curious problem. In the treatment of Hodgkins, if a full dose is given, almost invariably immediately following the dose there is a primary swelling of the gland. If these glands should happen to lie in the thorax and are already seriously compressing the trachea (as the X-Ray shows), the danger is not a small one, that by a full dose you may produce sufficient swelling of these glands to complete the obstruction of the trachea and cause serious trouble. Just how much of his dyspnea and cough is due to secondary trouble in the larynx is not at all clear. So I am having the otolaryngologists see him before I ray him. I frankly am afraid to ray the whole mass with a full dose at one sitting, and I think the procedure to be followed is to take the portion to the right of the median line on one day, screening off the left side, and treating it both from before and behind, being careful not to "spray" on the other side. Then, if he gets through the next three or four days comfortably, by which time the primary reaction should disappear, I will take the other side, and at the expiration of ten or fourteen days he will probably be in good shape to receive a thorough ray of the whole tumor from four directions.

Our experience with this tumor is that it is very amenable to X-Ray treatment. If I can tide him over the first three or four days, I am confident that I can put him back where he will be comfortable again.

DISCUSSION.

DR. LILLIE: We have not seen this patient yet, but it would be very difficult to say the extent, from the indirect method of examination, of pressure upon the lumen of the trachea, and the direct method would be contraindicated because of his intrathoracic condition. However, if the lumen of the larynx and trachea are not too greatly interfered with, there would be no doubt but that we could pass a catheter down through the tract to the obstruction and relieve the dyspnea that he might have following the severe reaction of the X-Ray treatment. The voice sounds like a recurrent paralysis, but those things are so indefinite that an examination of the larynx is the only thing that will reveal the laryngeal condition.

It is very interesting to see the improvement in this case of Hodgkins that has undergone sar-

HODGKIN'S DISEASE.

Figure 3. Radiogram, February 11, 1914. Tumor extends to about the level of the first intercostal space and is apparently continuous with the mass in the neck. Displacement of the trachea distinct in the cervical region.

comatous change. We lost a patient with lymphosarcoma this last fall who had been under treatment for

nearly a year. He had large masses in his neck, the process having begun in the tonsil. He would not yield to Colley's serum, and died shortly after leaving the Hospital.

HODGKIN'S DISEASE.

Figure 4. Radiogram, March 8, 1915. The mass is almost entirely intrathoracic. Cervical trachea in the median line. "Sabre-sheath" deformity of the trachea on the level of the second costal cartilage. Note the enormous increase in the volume of the thorax due to "obstruction emphysema."

REPORT OF A CASE OF CARDIOSPASM WITH DILATATION.

GEORGE VAN RHEE, A.B.

(From the Clinic of Internal Medicine, University Hospital, Ann Arbor, Michigan.)

Mrs. M., age 31, housewife, American. The patient entered the medical service, January 23, 1915 on account of vomiting and pain behind the ensiform.

Family History.—Negative.

Personal History.—Patient had chorea at the age of 14, which lasted one and a half years and typhoid at 21 with good recoveries. There is no history of specific infection.

The patient's trouble began six years ago with a severe pain in the epigastrium accompanied by a choking sensation extending upward into the esophagus and so severe that the patient became blue in the face. Solid foods, such as meat and cabbage caused the greatest amount of pain and vomiting. She had very little difficulty in retaining liquid foods until about twelve weeks before entering the Hospital. Since that time she has vomited food in the morning which she had taken the day before. Two years ago last August the patient was operated upon for this trouble with no relief.

Upon physical examination the patient showed marked emaciation. She weighs only ninety-four pounds, having lost about fifty since her trouble began. The patient is of very neurotic temperament. A Wassermann examination of the blood is negative. Blood and urine examinations are negative.

Examination of the vomitus showed absence of hydrochloric acid, remains of a previous meal, sarcines, nonmotile bacilli and lactic acid. A sixteen millimeter olive tipped bougie was passed by Dr. Marshall to a point forty-five centimeters from the teeth and no resistance was met with at any point. On moving the bougie backward and forward approximately forty centimeters from the teeth no resistance could be felt. An X-Ray examination showed a benign stricture of the cardia and dilatation of the esophagus.

Until within the last twenty years cardiospasm was a relatively rare condition. In 1878 Von Ziemsen collected the first series of cases of idiopathic dilatation of the esophagus. The report was based mostly on post mortem findings, little being known of the history of the cases. In 1904 Mikulicz estimated that one hundred cases could be collected from the literature. Plummer reported forty cases in 1908. Hyer, Einhorn, Erdman and Russell and others have made valuable contributions to the literature of the subject.

The disease has been attributed to the following causes:

1. Primary cardiospasm. 2. Primary atrophy of the musculature of the esophagus. 3. Simultaneous presence of cardiospasm and paralysis of the circular fibers of the esophagus brought about by paralysis of the vagus. 4. Congenital predisposition. 5. Primary esophagitis. 6. Kinking at the hiatus of the esophagus.

According to Gootstein motor disturbances of the esophagus are classified as follows: 1. As hyperkinetic, in which spastic contractions of the muscles of the esophagus exceed the physiologic normal. 2. Hypokinetic impairment of the muscle tone.

Primary atony is a possible but a rare condition. In the study of a large number of cases

reported, the history shows that a retention of food is most convincing evidence that a spasm precedes the dilatation. Furthermore, early muscular hypertrophy is found in nearly all cases coming to autopsy, both in cases having a dilatation and those without any.

The theory of congenital predisposition has received a great deal of consideration. Myer thinks that cardiospasm has a congenital basis. He has found the condition present in individuals with a tendency toward the general asthenic state. These individuals are characterized by a slender, gracile build, long, flat thorax, acute costal angle, floating tenth ribs, pulsating aorta and splanchnoptosis.

The real cause of cardiospasm is largely speculative. The consensus of opinion is that the condition is of nervous origin, but why it develops in certain persons has never been satisfactorily determined. One inclines to this belief from the fact that mild cases are often relieved by a single treatment or by passage of the tube in simple stomach analyses. A few cases have been reported associated with gross lesions of the esophagus, as ulcers, fissures, and small carcinomata in the cardia. Esophagitis and ulcer of the esophageal wall not in close proximity to the cardia are regarded as secondary to cardiospasm.

In the development of cardiospasm three stages may be recognized. 1. The stage in which the peristaltic contraction of the esophagus is sufficient to force food through the spastic cardia. This is characterized clinically by discomfort, pain and choking sensation, as shown in the history of the case under discussion. 2. The peristaltic force of the esophageal muscle is no longer able to overcome the resistance of the contracted cardia and the food is immediately regurgitated. The increased work of forcing the food past the cardia results in early hypertrophy of the esophageal muscles. As the spasm becomes more and more severe the esophagus becomes less and less able to overcome the obstruction and atony and dilatation result. 3. When the esophagus begins to give way the dilatation is rapid. This stage is characterized clinically by the retention of food in the esophagus and its regurgitation at irregular intervals after ingestion.

In a typical case of cardiospasm, symptoms which are pathognomonic may be divided as follows:

Cardiospasm without food regurgitation. In most cases the attack occurs suddenly and unexpectedly when the patient is at the table. A spasmodic choking sensation is felt at some point in the esophagus usually at the cardia and radiating to the back of the neck. It is rarely described as a pain. Some locate the discomfort entirely in the epigastrium, left hypochondrium or in the upper part of the esophagus. In the second stage the food is regurgitated immediately after swallowing. During the early part of the disease the attacks occur periodically or a mild spasm is continuous with periods of marked exacerbations of the disease. In this patient it has always been present and still occurs at the present time. While in the Hospital the patient has had three such attacks. The first portion of each meal is retained. After filling the sac further, food is regurgitated or the preceding portion is forced into the stomach. The more fluid portion usually seeps through the cardia, as was the case with this patient. The solid food with much mucus is either regurgitated at irregular intervals or remains in the sac until the next meal. The latter is no uncommon occurrence. In these patients the vomiting is painless and rarely accompanied by nausea.

In the diagnosis of cardiospasm the following must be considered:

First, One must determine whether the food is regurgitated from the esophagus or stomach. The usual test meal is given. If obstruction exists sufficient to prevent the food from entering the stomach, it is given with a tube. In this case both were impossible. At the end of an hour the stomach contents are removed in the usual manner and then the esophageal contents are also removed. The esophageal contents are either alkaline or neutral. Lactic acid, sarcines and bacilli are often found. In the case under discussion all three were found.

Second, The existence and character of the obstruction must be determined. This is done first of all with an ordinary stomach tube when the spasm is not too great. In this event a wire stylet is used. An olive tipped bougie which was used in this case may be employed, or a silk thread and whale bone staff as advised by Plummer. Finally a radiograph may be made.

Third, The presence or absence of esophageal dilatation and its shape and size must be ascertained. This is done by attaching a rubber dam balloon to the lower end of a stomach tube in such a manner that the tube communicates with the interior of the balloon. A spherical or oval silk bag about twenty-two millimeters is drawn over the balloon and fastened to the tube. This is introduced into

the stomach with a whale bone staff and distended with water under sufficient pressure to make the stylet tube and balloon form a solid sound. The sound is drawn up to locate the cardia and collapsed, drawn into the esophagus and distended. If under distention the sound is freely movable up and down, the silk bag is replaced by a larger one. This is Plummer's method. Strauss uses a similar method, only he distends the bag with air and measures the latter to determine the size of the sac. The former method is the preferable one.

Fourth, An esophagiscopic examination is made.

Various methods of treatment have been employed. In this case the initial treatment was palliative. The sac was washed twice a day and one-eighth grain of cocaine given by mouth after each lavage. This seemed to give some improvement in the beginning but did not produce a lasting effect. The patient was given one one-hundredth grain of atropin hypodermatically, which produced no results. Then both cocaine and atropin were given with no results.

After these measures failed a Sippey dilator was used. The dilator was passed to a point about thirty-seven centimeters from the teeth at which point a definite obstruction could be felt, but one which was easily overcome with slight pressure. The dilating bag was passed to a point just beyond this resistance and inflated. On inflation the patient complained of sharp pain high in the epigastrium. While inflated the bag could be passed up and down with ease but apparently met with a slight obstruction at a point four or five centimeters lower down. This dilatation was kept up for five minutes. When the dilator was removed fresh blood was found indicating the possibility of a fissure or old ulcer at the cardia. The patient has had five similar treatments at intervals of three days. After each treatment the patient retained from two to three meals. Today the patient weighs one hundred pounds and has shown marked improvement.

The dilating bag almost universally used is the one devised by Plummer. It is made by cementing a rubber dam balloon, also called a Russell bag, to one end of a piece of nonelastic rubber tubing in such a manner that the tube just passes through the balloon. A number of holes are so punched in the rubber tubing that its lumen connects with the interior of the balloon. A sausage shaped bag is drawn over the balloon to preserve its shape on distension. A second rubber balloon is drawn over the instrument to facilitate its introduction. The size of the bag used varies from ten to thirty millimeters. The dilator is connected by rubber tubing to a monometer and water tap or pump. The pressure required varies from fifty to five hundred millimeters. It is determined up to a certain point by the tolerance of the patient as indicated by the pain. With this dilating bag from one to thirteen treatments are required to produce a cure.

From observation of this case it seems to me that the Sippey dilator is not an advisable one to use. First, it causes too great discomfort to the patient because the staff cannot be removed; second, the treatment cannot be extended over a long enough period; third, the dilating bag has no monometer; fourth, the bag cannot be distended enough; fifth, it cannot be used in the case of stricture; sixth, the bag cannot be held in place.

In order to obtain the very best results the patient must be treated early. I doubt if complete relief is possible after sacculation of the esophagus exists.

DISCUSSION.

DR. MARK MARSHALL: This case has been a very interesting one to follow in the clinic. Mr. Van Rhee has quoted from Plummer of the Mayo Clinic, who undoubtedly takes the lead in the diagnosis and the treatment of cardiospasm. I think probably Sippey of Chicago is more experienced and successful in the treatment of organic strictures, but in the matter of managing cases of spasm Plummer has the better apparatus.

In regard to the etiology of the condition, it never has scemed to me in the few cases that I have sees that such a condition can arise entirely as a neurosis, i. e. be due merely to a neurotic tendency upon the part of the patient. In noting spasms in other sphincters of the body, such as the pyloric and anal sphincters, we find that only mild conditions of spasms can exist purely as neuroses. Where the spasm is sufficiently marked to cause definite pathology at a point proximal to it, it is due usually to an ulcerated condition. Pyloric ulcers are frequently the cause of severe attacks of spasm. Spasm of the anal sphincter in severe cases is nearly always due to a fissure. If the fissure is treated the spasm disappears. Undoubtedly, we see many cases of spasm of these sphincters that are pure neuroses, but as a rule they recover with slight therapeutic measures. In this particular case, I would like Dr. Van Zwaluwenburg to discuss the X-Ray findings because they show certain features which seem to me to give the correct etiology in the case. The passage at the point of constriction is not straight but more or less tortuous, and in the plate I saw, it had the appearance of having something external to the esophagus distorting its course. Meyer of Washington has reported cases in which this is true; where the original pathology is not due to an ulcer within the esophagus or upper part of the stomach,

but due to some pathology outside of the esophagus resulting in adhesions which draw the esophagus to one side or the other. In this case there was a definite kink giving the appearance of a curve at the constricted portion, which led to difficulty in the passage of food.

Another point which seems to me in favor of such a condition in this patient is the fact that with the bag fully dilated one can pass it up and down with ease at the point of constriction. It does not seem very probable that a spasm would be so easily overcome, for if it were, why isn't it overcome by the food in the ordinary process of swallowing? It would seem on the other hand that there is a valve-like action as was suggested by Dr. Van Zwaluwenburg.

The fact that the case has not shown the usual good results would make it seem that there is something besides a simple condition of spasm here. Plummer's cases recovered in from one to thirteen treatments. This patient, I believe, has had five treatments and the improvement is very temporary after each treatment. One or two meals are retained following each dilatation.

DR. J. G. VAN ZWALUWENBURG: The X-Ray picture is a fairly typical one of an old spasmodic cardia with a secondary dilatation and with widening of the esophagus. These pictures were taken in stereo so that by the use of two plates you could see the dilatation was not only lateral but that there is a spiral terminating in a rather narrow end. This is the ordinary picture. In X-Ray circles it is beginning to be more and more firmly believed that all these things are reflex. We know that pyloric spasm is almost invariably reflex, either from pathology in the immediate vicinity or at a distance. Probably many pyloric spasms are due to pathology in the cecal region. It is much more probable that most of these cardiac spasms are due to a small gastric ulcer. The cure in anal fissure is obtained by dilating the sphincter sufficiently to paralyze it, and while it is recovering from its paralysis the fissure has a chance to heal. If we could dilate such a cardiac spasm to the point of paralysis, I think the chances of recovery would be much better.

A recent development of technic in the examination of esophageal conditions is due to Dr. Stewart of New York. Where there is a stricture of comparatively wide degree, or where a spasm occurs which is not entirely complete, he uses a portion of sausage skin, really hog casing, and the patient is asked to swallow it. The lower end of the sausage casing is tied off. After it is in place it is filled with the barium mixture and the picture taken. In that way we get not only the upper level of the stricture, but the lower level as well. It shows very nicely these low degrees of stenosis.

DR. HAROLD I. LILLIE: Regarding these spasms, last summer I had occasion to see a case of esophagismus in a man who was working on the road. Very suddenly he noticed that he was unable to swallow drinking water. He feigned a very severe illness and called his doctor. He could not swallow. I saw the man early in the evening and it was under very unfavorable circumstances for an esophageal examination. However, I made a fairly good examination under the circumstances, and could find no pathology at all. I passed the largest size McKenzie bougie with ease. After it passed the pharyngeal orifice of the esophagus no obstruction was encountered, but one could feel the pressure of the upper end of the esophagus upon this bougie. There was no apparent pathology at all. As soon as the bougie was removed the spasm would recur, but passed away as soon as the bougie was left in place a minute or two. When the patient swallowed, the spasm would occur. It was in the country and we had no facilities for dilating the esophagus with the ordinary dilators we are in the habit of using, because we had no electric lights and such work requires electric lights. The case was interesting in so far as it was a pure and simple neurosis. The man recovered after a few days when the work was finished on the road.

It is very interesting in these cases of cardiospasm to make an esophageal examination with the cardioscope. The picture is rather typical, unlike that which is found in organic constrictions. We have seen several cases and in one have dilated the cardia with a very powerful instrument and have held it in place for more than five minutes. This patient has never had a recurrence. We see him every six months. He has gained forty pounds in the last two years. He was unable to swallow anything but fluids. It would be interesting in this case to get the esophageal picture of the instrument as it goes down the esophagus. If there is an ulceration or fissure, you would have the basis for the spasm.

A CASE OF TUMOR OF THE KIDNEY MISTAKEN FOR AN OVARIAN CYST.

WARD F. SEELEY, M.D.

(From the Clinic of Obstetrics nad Gynecology, University Hospital, Ann Arbor, Michigan.)

I wish to report the following case more on account of the mistake in diagnosis than for the rarity of the condition or for any peculiarity in the operative technic. Mistakes in diagnosis are always an added incentive to more painstaking clinical study, and this is especially true when applied to the surgeon who should conscientiously exhaust all methods at his disposal for accurate diagnosis and not be satisfied with simply stating his findings after the abdomen is opened. It is not always the case which on its face offers difficulty in diagnosis that affords the greatest interest at operation. At times the apparently simple case is a distinct surprise when the abdomen is opened, as the following will illustrate:

Mrs. G. L., age 47, entered the University Hospital, February 10, 1915 complaining of a gradually enlarging abdomen.

Family History.—Negative.

Personal History—Negative.

Menstrual History.—Always regular until the

last few periods when the flow has occurred every three weeks. Otherwise negative.

Leucorrheal History—Negative.

Marital History.—Married seventeen years. Health good since marriage.

Puerperal History.—Has had three children and one miscarriage without complications.

General History.—Appetite good, no cough nor night sweats. No cardiovascular nor gastric symptoms. Bowels regular. No tarry stools. No hematuria. No urinary symptoms.

Present Trouble.—The patient comes to the hospital for enlargement of the abdomen. This began about four years ago when she discovered

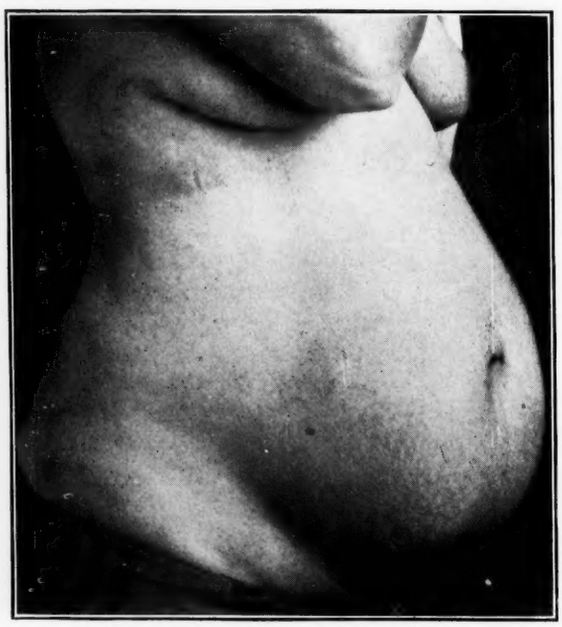


Figure 1. Cystadenoma of the Left Kidney.

a firm, rounded mass about the size of a grape fruit in the *lower* left quadrant. This was not tender and caused no symptoms. Since first discovering the mass it has gradually increased to its present size (Figure 1) and has caused her no symptoms aside from the inconvenience of an enlarging abdomen. The patient can move the mass freely from side to side. There is no history of chills, fever, nausea, vomiting, jaundice or loss of weight or strength. General health is excellent.

Examination.—The patient is of moderate frame, good nutrition, conjunctiva and mucous membranes of good color. Breasts; Montgomery's follicles enlarged. Secretion can be expressed from either breast.

Abdomen.—Enlarged, particularly in left lower quadrant. Highest point three inches below and to left of umbilicus. On palpation a large tumor is felt, apparently arising from the left lower quadrant and pelvis, which reaches almost to the ensiform and extends well into both right upper and lower quadrants. The mass is freely movable, being easily displaced to the right side of its abdomen. There is no tenderness. The smaller upper pole of the mass feels rather firm while the larger lower portion is distinctly cystic. No evidence of ascites on percussion.

Vaginal Examination.—Outlet, multiparous. External and internal perineum lacerated. Rectocele.

Cervix.—Bilateral laceration, points upward.

Uterus.—Displaced backward and to the right but apparently not connected with the abdominal mass.

Appendages.—Cannot be made out on account of abdominal mass. Tumor above described is easily palpated through posterior cul-de-sac and has a distinctly cystic feel.

Physical Examination.—Negative.

Blood.—Reds 4,600,000, whites 11,400, hemoglobin 85, blood pressure 147.

Urine.—Few white cells and urates, otherwise negative.

Wassermann—Negative.

Diagnosis.—In the light of the above findings a diagnosis of multilocular ovarian cyst was made and the patient prepared for operation.

Operation.—The abdomen was opened by a rather high median suprapubic incision and was found to contain a large cystic mass extending from the pelvis to the ensiform. On exploration of the pelvis the uterus was found displaced backward by the tumor mass but both ovaries were normal. On further exploration the descending colon was found to be stretched over the mass, which was retroperitoneal and arose from the left kidney. After palpating the right kidney and finding it normal it was decided to remove the tumor through the abdomen. The peritoneum was cut and the tumor dissected free at its lower pole. The mass was too large to remove through the incision which had been carried above the umbilicus but after aspirating 2,200 cubic centimeters of fluid the remainder of the mass could be lifted upward and partially delivered through the abdominal incision. The pedicle was clamped and cut and the tumor and kidney removed. The redundant peritoneum was cut away and the remainder anchored to the upper end of the incision and the cavity packed with gauze and a drainage tube left in place. The abdominal wound was

then closed in layers and the patient returned to bed.

Convalescence.—The convalescence has been entirely uneventful. The gauze packing was removed without hemorrhage and the abdominal wound has healed by primary union. The patient will be discharged within a few days.

Pathologic Diagnosis.—The pathologic diagnosis returned by Dr. A. S. Warthin is as follows: "Multilocular cystadenoma of the medullary pyramid. A regeneration cyst containing cholestrin. Numerous foreign body giant cells." It is probable that the tumor originated in remnants of the Wolffian body. The prognosis in this case should be favorable, especially so as the tumor was distinctly not of the congenital cystic kidney type.

AN EPIDEMIC OF WEIL'S DISEASE.

HOWARD H. CUMMINGS, M.D.
Head of the Health Service, University of Michigan.

Twenty-nine years ago, Weil described an acute disease, characterized by fever and jaundice and occurring in epidemics. Since then, this condition has been called infective icterus, acute febrile icterus and Weil's disease. Several epidemics have been described. In 1899 and 1900, a large epidemic occurred in North Carolina. Griesinger in Cairo and Katulis in Alexandria, described a similar condition and gave it the name "bilious typhoid." Other observers have reported epidemics in Egypt, India and South Africa.

Sporadic cases of acute catarrhal jaundice, febrile forms of gastrointestinal diseases with slight jaundice and abortive typhoid cases, have been incorrectly reported as Weil's disease.

During the last three months, I have seen twenty-five students showing jaundice and after investigation, I feel fairly certain that nineteen of these were cases of Weil's disease.

The first case observed, was diagnosed incorrectly. A young man was sent to the University Hospital; it was supposed he was suffering from acute appendicitis. When examined at his room, his temperature was 102.4 degrees. He had been vomiting and his abdomen was definitely rigid, but more marked over the right rectus. A blood count showed a leucocytosis. On the third day after entering the Hospital, a distinct jaundice appeared and he was transferred to the department of internal medicine. After the gastrointestinal symptoms had disappeared and his temperature was normal, he was discharged, but the jaundice persisted for nearly two weeks. Not long after the first case appeared, a cousin of the first student affected, was found with an identical condition. These boys did not room together but they associated a great deal.

About one week later, five cases were found in two houses on the same street and within a few doors of each other. These students were companions and roommates. In twelve of the nineteen cases, it was found that the sick students had associated with an infected roommate, classmate or friend.

Varying in degree, the chief symptoms and signs were; chilly sensations; fever, ranging from 99.5 to 102.8 degrees; nausea and vomiting; loss of appetite; muscle soreness and stiffness; jaundice, appearing on the second to the fifth day of the disease and persisting on an average for two weeks. Pruritus was complained of only in the severe cases. The conjunctiva and tongue showed the bile staining early. An enlarged and tender liver was found in most of the cases. The stools were clay colored, while the urine showed a great increase in bile pigment.

Examination of the throat in severe cases revealed a swelling of the lymphoid tissue and marked congestion of the pharyngeal vessels. Three students showed enlarged cervical glands.

A diagnosis was based on the symptoms of an acute, severe infection associated with jaundice and occurring as an epidemic.

This series of cases was treated with salol and phenacetine, two and one-half grains of each, administered every three hours during the acute stages. Calomel in divided doses and followed by salts, stimulated elimination. An ounce of effervescing salts was given night and morning during the first week. The patients were encouraged to drink plenty of water, to bathe frequently and to take moderate exercise after the acute symptoms had subsided. Moderate exercise seemed to hasten the disappearance of the jaundice.

In 1892, Jaeger reported the cultivation of a bacillus, proteus fluorescens, from the urine of living cases and from the liver of a fatal case. Bacillus proteus is one of the common bacteria found in decaying organic matter. It is a long, slender bacillus and shows a marked tendency to form flagella. Booker and Ohlmacher reported outbreaks of food-poisoning due to infection with this organism. Metschnikoff regards it as the usual cause of infantile diarrhea.

It has been often noted that Weil's disease appears in persons who have been in contact

with decomposing animal matter. Because of this I traced the source of food in the nineteen cases reported. Only three of these students ate at the same boarding house. About twelve different houses furnished food for these patients. Of course, it is possible that decomposed meat was sold to each of the twelve boarding houses, but this seems improbable. Several of the boarding houses were large and many cases would have appeared had the food been contaminated.

Colon bacilli have been found in the urine from patients with Weil's disease, but this is probably a contamination and not the etiologic agent.

In conclusion, it seems possible that Weil's disease is not only infectious but mildly contagious. The infective agent produces in many cases, a true hepatitis as made manifest by the enlarged sensitive liver. The throat picture suggested to me the possibility of the lymphoid tissue as the avenue of infection.

DISCUSSION.

DR. Q. O. GILBERT: We have had only two of these patients in the Hospital. A blood culture was taken from the last one—the one shown tonight. It is still negative and will probably remain so as it was taken while the patient was here in the afebrile period.

The etiology of these cases is important and it seems unfortunate that in such a definite localized epidemic the bacteriologic study of these cases could not have been made. It is very interesting to have Dr. Cumming's idea of the focal origin and that it should be in the throat. This has a practical bearing on the taking of blood cultures for if we have a bacteremia because the organisms are given off to the blood stream from the source of focal infection, the blood culture should be taken during the febrile period, preferably during the early rising period. This is a view widely held now. We have had the opportunity recently of taking cultures from two hospital cases with terminal infections with jaundice not unlike that found in the epidemic. The one case with a localized peritonitis gave repeatedly colon bacilli in the blood cultures and the other a case with gangrene staphylococci in two cultures.

The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

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Subscription Price—$3.50 per year, in advance.

May

Editorials

INTROSPECTION.

As members of the medical profession we are busily engaged with our practice, the earning of a living and the fulfilling of the many engagements and demands made upon us and our time. Unless we pause frequently to take stock of ourselves or review our present capabilities, we will all too soon find the yoke of habit firmly fixed upon our shoulders, our progress stationary and ambitions to rise stunted. Do we as individual doctors stop often enough to consider whether we are advancing, remaining abreast with medical progress and utilizing the latest approved methods in our daily work? Have we a standard whereby we measure our ability? Are we acquiring a broader intellectual viewpoint as the weeks pass by? Do we go back frequently to some point or time and measure ourselves by it and ascertain whether we have grown—or remained stationary?

A story is told of one of our greatest American artists that he found, when a student, in one of the famous art galleries abroad a certain picture that delighted him greatly. He would sit before it for hours drinking in its beauty. He studied every detail of it. He felt he knew every art value in it of line and color and composition.

Several years afterward, being again in this city, he hurried with eager steps to see "his picture," as he called it to himself. He was, too, a trifle anxious to see if it would mean as much to him as before. He wondered—just a little—if he would be disappointed in it.

To his joy, he discovered that he found much more pleasure in it than before, much more to satisfy his artistic sense. The picture showed him how much he had grown artistically. He thought he had already seen all there was to be seen in the picture. But coming to it fresh from further studies, he discovered much in the picture he had not seen before.

Several years afterward, he again repeated the experiment, to find the picture still held more for him. And he says that now, though comparatively an old man, he goes back to that picture as his measure of growth. He says he knows he is growing in his art when he still finds something new in the picture; and that when it becomes a closed book to him, he will know he has stopped growing.

We wonder how many doctors have something by which to measure their growth? We know that growth is essential. Do we go back like this artist, to some thing or place, to measure ourselves by it and see how we have grown? Haven't we any such mute friends? Are we utilizing them to investigate our personal growth?

You, as an individual doctor, have a responsibility that is broad in scope. It extends beyond the bounds prescribed by law—to exercise an average amount of skill and judgment governed by the practice of the particular community in which you reside. Were every physician to only exert himself to that extent the advancements that have been and are being recorded would not occur. It is incumbent on every physician to endeavor to rise to a degree of greater ability and cause himself to remain ever abreast with the universal progress of his profession. The demands of active practice oft impose a barrier and single handed he is defeated in the attempt to acquire practical knowledge and ability to apply the new and proven methods of modern investigations. There is, however, within the reach of every physician a medium whereby he may surmount this barrier. That medium is his county medical society. By actively participating in its deliberations and the attendance at every meeting the opportunity is provided by means of which one acquires the ability to veer from habit's rut and step up into a larger sphere of modern usefulness. Thus will you grow.

ACUTE CARBOLIC ACID POISONING.*

Acute carbolic acid poisoning is of such frequent occurrence that we feel that the gist of this author's experience will be of value to our readers.

Carbolic acid poisoning occupies the highest place in the fatality list of all poisons. It is one of the most quickly fatal poisons, therefore, to save a patient very prompt attention is required, and appropriate first aid is of vital importance.

Lavage of the stomach has for a long time been recommended and for this purpose plain water or watery solutions of various substances have been employed. Two drugs in particular have been used in this connection on seemingly rational grounds. These are alcohol and sodium sulphate.

The internal use of alcohol originated from a rather naive and fallacious deduction that, because alcohol is an excellent antidote for carbolic burns of the skin, therefore it must be useful in the treatment of carbolic burns of the stomach.

After conducting numerous experiments on animals to whom the author administered lethal doses of carbolic acid and then employed all of the various antidotes and measures of resuscitation with the careful noting of the experiences in each experiment, the author makes the following statement regarding the fatal results attendant upon the use of alcohol:

From the above protocols it will be seen that introduction of phenol into the stomach of cats and dogs, in sufficient quantity will without a therapeutic procedure invariably produce death; but that the animal can often be saved by thorough lavage of the stomach. Of the three reagents used for this purpose and chiefly studied in this connection, sodium sulphate was found to be the most efficient, next in order being plain water. Alcohol was found to be distinctly deleterious, and often appeared to hasten a fatal issue. The chances of rescuing an animal depend firstly on the dose of poison swallowed or introduced into the stomach; secondly, on the promptness with which the lavage is begun, and, thirdly, on the solution used in washing the stomach. The earlier the lavage is begun the greater the chances of recovery, even though a large quantity of the poison has been taken. The presence of food in the stomach greatly increases the chances of recovery. In my experiments I have purposely refrained from any other measures in resuscitating the animal except artificial respiration, massaging the precordium, and keeping the animal warm; but the judicious use of stimulants would seem to be indicated, although in the few experiments in which I tried them no striking effects were noted. For the use of emetics recommended by some authors, there seems to be no rational ground.

*Extract from Johns Hopkins Hospital Bulletin, April, 1915. David I. Macht, M.D.

SUMMARY.

1. The efficiency of lavage in phenol poisoning depends on the quantity of poison taken, on the time after poisoning that the lavage is begun, and on the solution used for washing the stomach.
2. A strong solution of sodium sulphate appears to be the most useful for the purpose; next in efficiency comes plain water.
3. The influence of alcohol in phenol poisoning depends on the time of its administration. An animal that is previously intoxicated with alcohol can withstand better the effects of phenol taken afterwards. On the other hand, alcohol administered to an animal after poisoning with phenol will aggravate the symptoms and hasten death.
4. The use of alcohol in carbolic-acid poisoning should therefore be strongly discouraged.

One who reads, with studious thought, the author's experiments and review of the literature is forced to agree with him that: "Dependence should not be placed on alcohol as an antidote." It will aggravate the symptoms and hasten death. Strong solutions of sodium sulphate appear to be the most useful and next in efficiency comes plain water. Sodium sulphate —Glauber's Salt—is certainly readily obtained and may be found in many households.

Sodium sulphate is preferable to magnesium sulphate on account of the possibly depressant effect of the magnesium ions, in case of their absorption.

The subject is one that merits study and clinical observation. The author's contribution is valuable and points out an impressive method whereby the fatality from carbolic acid poisoning may be lessened.

GONORRHEA.

The subject of gonorrhea is so broad, so comprehensive and there are so many angles at which it may be viewed, that, perhaps, the best perspective is obtained by analyzing, one at a time, its numerous manifestations and combinations of symptoms. If we will do this, then form a composite picture of all that is embraced by the word—gonorrhea—we will better understand the conditions as they exist in individual cases. How much better it will be for us, for our patients, our community—even our world! —for there is no specie of the *genus homo* that is immune to the gonococcus. At our present rate of progress, it will be many generations, if not centuries before this disease that is now so prevalent, is eradicated. The sooner thorough,

painstaking, conscientious examinations are made as a routine, the sooner will this desired end be attained.

The chronicity of many cases, the absolute failure to cure others, is very frequently due, not to a lack of knowledge, but to failure in giving attention to details—should we say indifference on the part of the physician?

We need but recall the large number of major operations necessitated by complications or sequellae of gonorrhea—variously estimated at from 25 to 50 per cent. of all gynecological operations—to realize the importance of making a thorough examination of each case and instituting appropriate treatment. It falls largely upon the general practitioner to study each patient as an individual case and to treat the existing conditions and not prescribe for all cases as if they were exactly alike. If cases of gonorrhea that present themselves were but considered and treated as individual cases, I am of the opinion that fewer subsequent operations will be required.

To be specific let us consider urethral gonorrhea in the female. Frequently the female urethra is alone primarily involved by the Neisser organism; comparatively few practitioners give this consideration. We know that if it is neglected this urethral infection will ascend to the cervix and later involve the tubes, ovaries and peritoneum. Frequently the only treatment prescribed is a vaginal douche with possibly internal alkaline medication. It is but natural that the douche be ordered discontinued as soon as the vaginal discharge ceases and by so doing there is encouraged a chronic urethritis with its possible disastrous complications.

It is common knowledge, at least it should be, that a woman may have an urethral infection without any accompanying leuchorrea; in fact, there may be no urethral discharge present nor can any be obtained by "stripping." However, by means of the platinum loop, the specific organism will often be found. Very few physicians, even in remote districts, are without or do not have access to a microscope. The technic of making a smear is simple and a microscopical examination made in but a few minutes.

If the infection is limited to the urethra, as is usually the condition found early in the infection, a one, or, a one-half per cent. solution of protargol injected into the urethra three times a day, in addition to a vaginal douche, almost, if not quite invariably effects a cure. The urethral injection will correct the urethral infection and the vaginal douche will prevent ascending infection of the tubes and adnexa.

Weekly examinations should be made of the patient to ascertain whether or not complications are arising; a microscopical examination is indicated with the same frequency. The patient may be taught to inject the protargol with a glass syringe and to hold the solution in the urethral for from three to five minutes—the latter procedure is best secured by holding the tip of the syringe in the urethra after the solution has been injected.

For anatomic reasons, early urethral gonorrhea in the female is more easily dealt with than a similar condition in the male. In the first place the prostrate and seminal vesicles can be forgotten and secondly, the urethral follicles in the female are less numerous and less patulous and therefore less apt to become infected.

If the above treatment, after complete cessation of subjective and objective symptoms, together with repeated microscopic findings, be followed by a "beer test" and there then does not occur a reappearance of the symptoms, the physician who has put himself to some inconvenience to be sure of his diagnosis and the location of the infection, may modestly pat himself upon the back and chuckle at the fact that the surgeon has been denied the opportunity of a later laporotomy.

In every case of urethritis it is important for the physician to determine whether he is dealing with an acute or a chronic infection; whether it is specific or non-specific and the exact location of the infection. Clinically it is at times impossible to determine between specific and nonspecific urethritis; this may, however, be done bacteriologically.

We have purposely avoided referring to the adoption of hygienic, dietetic and medicinal measures. There exists a large amount of literature that may be readily secured upon this subject.

We would like to impress the average physician with the simplicity of the present day treatment of gonorrhea in its early stages. It does not require special training or skill to locate the seat of the trouble, to corroborate the clinical diagnosis with the microscopical and to treat the case accordingly. It merely requires a little patience and a little time.

JOHN R. CORRYELL.

Editorial Comments

From month to month we have been drawing your attention to our advertisers and have endeavored to demonstrate how essential they are to this publication's future. We have stated time and again that the only possible way whereby *The Journal* may continue to maintain the financial receipts from our advertising pages is to patronize them and so cause them to receive a reasonable return and replies from their investment in your *Journal*.

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You, doctor, can personally determine whether we will witness an increase of advertising contracts or a retrogression. Don't put this off by saying that your neighbor will respond and so it will not be necessary for you. Your neighbor may be thinking the same thing. It is you, personally, whom we are seeking to impress with this necessity of personal co-operation. Will you not this month observe this request and write these advertisers?

In civic life we pride ourselves in living in what we individually believe is the best place; we speak with pride of belonging and holding membership in the largest and best church, lodge, club or whatever civic organization we may be affiliated with. We boast of these affiliations and are actively interested in them; we endeavor to increase their membership by inducing our friends to join; we boost on every occasion and never fail to participate in their activities.

If this is so of our civic life why can not a like enthusiasm, pride and "boosterism" manifest itself in our relations to our medical organization? Will you not induce your professional friends to join? Boost your local medical society; exhibit a personal pride in it and its activities. May we not witness a state-wide movement and exhibition of energy to make every county society the most active and the State Society the banner organization of the union?

There are some 800 eligible unaffiliated physicians in Michigan. Personal pride should cause you to procure their affiliations to make your society the larger, more effective.

The days of grace granted for the payment of membership dues expired on April 1. Those whose dues remained unpaid on that date have been placed upon the suspended list and thereby they forfeit the benefits of membership, are without the protection of the defense league for any proceeding brought against them for services rendered during the period of suspension, and their *Journal* has been discontinued. If you have a friend who has permitted his membership to lapse do not fail to urge him to bring about his re-instatement by the immediate payment of his 1915 dues to his county secretary.

Apropos of our editorial on Poisonous Flypapers in the December issue bills have been introduced in the legislature of Michigan, Illinois, Iowa and Minnesota, regulating and limiting the sale of arsenical fly destroyers. It is certainly within the province and duty of every physician to warn the people of the dangers attendant upon the use of arsenical fly destroyers. During this summer remember that the child presenting acute manifestations of cholera infantum may be suffering from arsenical poisoning produced by the taking of a portion of the contents of these dangerous fly destroyers. During the past year some nine deaths occurred on this account. It is impossible to estimate how many children escaped a fatal ending and suffered from acute severe illness of gastro-intestinal origin induced by arsenic poisoning. Physicians may well add the dissemination of this information to the public to their movements of preventive medicine and sanitation.

The columns of practically all the better medical publications in the United States have been denied to manufacturers or agents who endeavor to sell unreliable, non-potent or fake therapeutic agents or who claim unproven results for their preparations. We regret that the two other medical publications in Michigan—*Detroit Medical Journal* and *The Therapeutic Gazette*—still deem it expedient and honest to accept and publish many of these questionable and unreliable advertisements. The dollars derived from such contracts cannot remunerate these publishers for the prestige they sacrifice in accepting such copy.

The Nurse published by the Nurse Publishing Co., Jamestown, N. Y., is now in its second year of existence. It is devoted to the work of nurses and contains in each issue several valuable original articles on practical and scientific nursing subjects, in addition to nursing news notes, medical and surgical progress, and an ably edited editorial department. Its illustrations are notable features of photographic art. In its brief period of existence it has secured a paid subscription list of over 8,000—a strong endorsement—for we are informed that no other nursing journal has ever attained such a large circulation. You will do well to write the publishers for a samply copy for inspection.

The last five legal cases this year against doctors that were defended by the attorneys of the Medico-Legal Committee, have been terminated by the presiding judge taking the case from the jury and directing a verdict of no cause for action. Thus is the value of our defense feature demonstrated. Thus also must we acknowledge the closer harmony of the entire profession for in all five cases cited the plaintiff failed to secure expert witnesses.

The Fiftieth Anniversary of our State Medical Society will be commemorated at our annual meeting in Grand Rapids on September 1-2. An unusually interesting and profitable program is being arranged. Our section secretaries request that you early inform them whether or not you desire to present a paper before any of the several sections. The scientific program is at present in progress of formation.

THE OLD LOG HOUSE.

Written by Dr. J. B. Griswold shortly before his death.

'Tis a little log house by the side of the road
That led from Clinton to town,
I'm recalling tonight, as I sit by the fire,
An old man, in slippers and gown.

"To the town," did I say? no there wasn't a town,
Just a school-house, (no shop and no store)
On a square piece of ground, dedicated a park
Where the people might meet—nothing more.

I looked for the house as I passed there last May,
And I stopped where the gate used to be,
But nothing I saw that invited me in,
Just the sod and an old apple tree.

For nothing remains of that little log house,
And the grass is as green where it stood,
As it is on the grave of the man who lived there,
And the grave of the woman he woo'd.

Then the apple tree spoke, and I hear its voice now,
As the embers burn low in my grate,
"I remember you, Jo, you're the same little boy
That planted me here by the gate."

"I remember the gate and the pathway that led
To the house that gave welcome to all,
And the latch-string that hung from the hole in the door
And the 'Come in' that answered the call.

"The sweetest of women, the kindest of men,
Kept a light in the window for me,
For that log house at night was a rendezvous quite,
And a scene 'twas a pleasure to see.

"No light in the window for sixty long years,
No folks, and no house any more,
No greeting, no parting, no coming, no going,
No gate and no path to the door.

"Not a friend have I left, and I'm withered and old,
I've no hope for a future estate,
So good-bye little boy, keep my memory green,"
Said the lone apple tree by the gate.

Deaths

IN MEMORIAM.
Dr. William Fleming Breakey.

In the absence of the Chairman of the Committee appointed by this Society to prepare and read a memorial notice of the late Dr. W. F. Breakey—one who has so fully discharged his duties as a citizen of the state and nation, and a loyal Alumnus of the University—we now present the following account of his life:

William Fleming Breakey was born at Bethel, New York, September 10, 1835; son of Isaiah Breakey and Polly Ann (Lyon) Breakey. His father came to this country from the north of Ireland when 20 years old—while on this side of the water there was some mingling of Huguenot blood. His mother's family came from New England; the maternal branch, Holmes, claiming Mayflower descent. He commenced his medical studies in 1856 at the Albany Medical College, where after one year of work he entered the Department of Medicine and Surgery of the University of Michigan, there securing his medical degree in 1859. He began private practice at Whitmore Lake, Michigan, but when, owing to the lack of medical officers after

the battle of Shiloh in 1862, the Governor called for volunteer surgeons to care for the wounded, Dr. Breakey at once responded, rendering valuable service until June 18, 1862 when he was commissioned First Assistant Surgeon of the 16th Michigan Volunteer Infantry, reporting for duty at Harrison's Landing on the James River. During September and October, 1862 he was on duty at the Officers Hospital, Washington, D. C. Shortly after the second battle of Bull Run he fell ill, remaining at, and in charge of a camp of invalids and recruits at Arlington, Va. whence he was detailed in January, 1863 to hospital duty at Alexandria, Va. Rejoining his regiment in April at Rappahannock's Station, he was first detailed as chief medical officer of the 20th Maine Volunteer Infantry, and later took charge of a division smallpox hospital. Next he saw service with the artillery of the 5th Corps, in medical charge of Battery I., 5th, U. S. Artillery, and of Bigelow's 9th Mass. Battery; after which he took charge of the Artillery Brigade Hospital of the 5th Corps. His duties remained unchanged until after the battle of Gettysburg July, 1863. Later, assigned to the charge of a division of the Lettermen Field Hospital at Gettysburg, he treated those too seriously wounded for transportation. During the battle of Gettysburg, being hastily summoned to a case of secondary hemorrhage he sustained a severe injury to his left thigh from which he never fully recovered. This resulted in his honorable discharge, and muster out of the service, after resignation of his commission in 1864. During the previous January he had, however, rejoined his regiment, re-enlisting on his return to Michigan, as he hoped that his injury would not prevent him from further active service.

Settling in Ann Arbor he continued to practice his profession until his death on February 13, 1915. He first joined the teaching force of the University in 1868, acting as Prosector of Surgery, and Associate Demonstrator of Anatomy for the session of 1868-69. Entirely by his initiative, and his urgent representations of its necessity in 1891, he established the department of Dermatology and served as a Lecturer on Dermatology and Syphilology until 1905, since when he served as Clinical Professor of these branches until his resignation in 1912. For ten years he served as Health Officer of Ann Arbor, and for over thirty years as Examining Surgeon of the local Pension Board.

He is the author of numerous articles on medical, scientific and other subjects, among which the most noteworthy are: "The Conservative Value of the Artificial Induction of Premature Labor" (Mich. State Medical Society 1877). "Ulcerative Perforation of Stomach" (Mich. State Medical Society 1887). "Some Medical-Legal Questions of Smallpox" (Mich. State Medical Society 1889). "Mutual Obligations and Responsibilities of the Physician and the People in Promoting Medical Science" (1890). "Needs for Better Study of Diseases of the Skin" (1901). "The Light Cure in Lupus" (*Physician and Surgeon*, 1901). "A Case of Mycosis Fungoides" (*Journal, Cutaneous and G. U. Diseases* 1902). "Conditions that Influenced the Rise of the X-Ray in the Treatment of Epitheliomata and Other Skin Diseases" (Clin. Society Univ. of Mich. 1903). "Parasitic Sycosis Communicated from Cattle" (*Jour. Cut. Diseases*), etc., etc.

He was married June 28, 1862 to Miss Jennie E. Stevens of Whitmore Lake who died March 13, 1879, by whom he has two children, Mrs. E. D. Adams of Leyland-Standford University and Dr. James F. Breakey of Ann Arbor. On April 28, 1884 he married Miss M. Louise Renville of Brooklyn, N. Y. who survives him.

A member of the G. A. R. the M. O. L. L. the American Medical Association, the American Dermatological Association, the Michigan State Medical Society, of which he was President in 1904, the Northern Tri-States and Washtenaw County Medical Societies, and an active member of the Board of Directors of one of the local banks, his professional and other interests were multifarious.

Your committee desires to call attention to certain admirable characteristics of Dr. Breakey, commending them as an example to be followed by the younger members of the profession.

To those who knew him the following statements are superfluous, but we wish to place on record some adequate estimate of the esteem in which he was held by all those who knew him. His was a most lovable disposition. He never harshly criticised others. He never spoke ill of others because he never thought evil of them. If he could not honestly say pleasant things, he said nothing. His kindly sympathetic manner won the confidence of his patients. His slow, deliberate way of listening to all a patient had to say inspired the confidence that his ease would be carefully weighed; that he was never to hurried to consider all sides of the problem. The kindly, but somewhat humorous way he received the complaints of his clients, even when himself more ill than they were, should teach us all a lesson. Towards the last he was rendered intensely uncomfortable, when not actually suffering acutely, by complication but it was rare for him to be other than cheery and uncomplaining. He was an admirable example of an honest, upright, Christian gentleman.

WM. BLAIR,
CHAS. DE NANCREDE,
V. C. VAUGHAN,

Dr. L. S. Griswold, of Big Rapids, Michigan, died Sunday morning, April 4, 1915. He was born in Ohio on January 3, 1853 and lived on a farm until he was 17 years old. He received his early education in the schools of Greenville, Michigan and graduated from the Detroit Medical College in 1879. He commenced practice in the village of Sand Lake, Kent County, moving from there to Big Rapids in 1881.

Dr. Griswold was a fine general practitioner and surgeon. He belonged to the well known type of old fashioned family physician, always ready to attend to a call either day or night and at the same time possessed much ability as a surgeon, having received his training in the emergency surgery that was so common in the lumber woods at the time he commenced practice and for many years thereafter.

It is quite probable that no one in Big Rapids came closer to the family circles of more homes than did Dr. Griswold during his residence there. In many homes he has been the only physician to afford assistance in case of illness for more than thirty years.

He was buried under the auspices of the Knights Templar on Wednesday afternoon, April 7.

The doctor was in the harness up to the last, having worked all day Saturday and until 10:00 o'clock in the evening, attending to the duties of his profession. He retired in his usual good health, but aroused his wife at 2:00 o'clock complaining of cramps in his arms and back and difficulty in breathing. At 2:30 he was seized with a violent convulsion which produced immediate paralysis of the respiration, so that his death was almost instantaneous. It was generally supposed that he was in perfect health and the exact cause of the fatal convulsions was not determined.

Dr. Griswold was a charter member of the Mecosta County Medical Society, and for many years a member of the Michigan State Medical Society and the American Medical Association.

Austin W. Alvord

It is with the deepest regret that the *Journal* records the death, at his winter residence, St. Petersburg, Florida, on the 23rd of March last, of Austin W. Alvord, A.M., M.D., of Battle Creek, Michigan. In his death, the medical profession of the State of Michigan has lost one of its most valuable and influential members.

Dr. Alvord was first appointed a member of the Michigan State Board of Registration in Medicine upon its inception in 1899, by Governor Pingree, at which time he was President of the State Medical Society. He was reappointed by Governor Bliss in 1901, by Governor Warner in 1907, and by Governor Osborn in 1911. Governor Ferris recommended him for reappointment just prior to his death. In 1901, the University of Michigan conferred upon him the degree of "A.M." in recognition of his services in the cause of higher education.

Dr. Alvord was endowed, by temperament, education and experience, with unusual qualifications as a member of the profession and as a citizen. As a member of the medical board he specialized along the lines of a systematized method of definite hours in medical courses, divided into lectures, laboratory and clinics, which has been adopted by the national medical associations, and as a natural sequence, by state medical boards. He was recognized by the profession, not only as possessing superior qualifications as a practitioner and as an administrator of state medical requirements, but also as a man of the highest integrity and broadest sympathies. He represented the type of man whose virtues and accomplishments will be more readily recognized after his departure.

Dr. Alvord will be greatly missed by all who had the privilege of knowing him, not only for his optimistic, congenial and sympathetic nature and his liberality to those in disagreement with him, but also his helpful and forceful support in all matters connected with his duties as a member of the medical board and the profession. He died "in harness," a soldier to the last in the cause of human service. A few days prior to his death, after performing a critical and tedious operation, he collapsed, which, owing to complications, resulted fatally.

Dr. Alvord was a member of an old and historic family, established in New England a few years after landing of the Pilgrim Fathers at Plymouth Rock. Gad Alvord, his grandfather, married Phoebe White, a direct descendent of Peregrine White, the first white child born in the Plymouth colony. Alanson Alvord, the father of Dr. Alvord, obtained a liberal education at Yale University, subsequent to which he entered the Union Theological Seminary of New York, and upon the completion of his course was ordained as a minister of the Congregational church. He was one of the founders of the First Congregational church of Chicago, in 1851. At the time of his demise, in 1862, he held the pastorate of the Congregational church of York, Pa., and was recognized as a leader in his religious denomination.

Rev. Alanson Alvord was married to Miss Barrows, of Brimfield, Mass., a lady of broad education, culture and refinement, who traced her ancestry back to the year 1640, her grandfather being a soldier in the Revolutionary War.

Dr. Alvord was the eldest of four children born to this union. His education was obtained at Oberlin College, Ohio, and in the literary department of the University of Michigan. Upon the completion of his literary course, he engaged in teaching for a number of years, being superintendent of the schools of Owega, N. Y., at the time of the outbreak of the Civil War.

Dr. Alvord enlisted in Company H., 109th Regiment, New York Volunteer Infantry, and went to the front as captain of his company, many of his former students accompanying his. Later the regiment became a part of the Ninth Army Corps of the Army of the Potomac, and participated in all the campaigns up to the time of the surrender of General Lee at Appomattox. Early in 1864 Dr. Alvord was promoted to the rank of post-quartermaster of the Department of the South, on the staff of General Foster, with headquarters at Hilton Head and Beaufort, S. C. During the greater part of the closing of the war he acted as surgeon, for although he was not graduated he had spent two years as a student in the medical department of the University of Michigan.

During his service as a commissioned officer, Dr. Alvord won great distinction, notably so in the Battle of the Wilderness, where he was in command of a company of some eighty men, in which engagement his entire company was lost, with the exception of fourteen, all of whom, including himself, were wounded. In October, 1864, by order of the Secretary of War, on recommendation of the Board of Army Surgeons, he was honorably discharged, his health being greatly impaired.

On regaining his health to some extent, Dr. Alvord completed his course in medicine, graduating in 1868 from the medical department of the University of Michigan. He subsequently practiced at Clinton, Lenawee County, and in 1882 removed to Battle Creek and established a state reputation as an advanced and successful surgeon.

In 1861, Dr. Alvord was married to Miss Eliza Barnes of Ann Arbor, by whom he had two children. Subsequent to Mrs. Alvord's death, in 1877, Dr. Alvord was united in marriage to Miss Fannie R. Little of Grinnell, Iowa, who died in October, 1901. Two children were born to this union. Dr. Alvord was married again in 1902, to Mrs. Addie S. Anderson, widow of Dr. Anderson, and a niece of Dr. Alvord's first wife. Mrs. Alvord, who survives him, is a Daughter of the American Revolution.

The sentiment of the profession is beautifully expressed in a letter under date of March 24th, from Dr. Arthur M. Hume, a fellow-member of the medical board:

"I am shocked and grieved to learn, by to-day's papers, that our good old friend Dr. Alvord has passed away. Though we knew he was weakening physically, his strong mentality and cheery optimism made us forget perhaps that he approached the sunset of life. He was your friend and mine; always loyal, no matter what such loyalty cost. I was young in the profession when we first met and he called me "Boy," in that fatherly, cheering, encouraging way he always had for the youngsters. He had a large mind and a bigger heart; and while his superior mentality sifted to the last grain every new idea of consequence, his heart held his old friends just as they were, with no disposition to scrutinize as to their weaknesses, their faults or their failings.

"His was a life of service to humanity and he lived it to the limit. He was one of the few physicians that I have known who seemed to be my ideal of what the "Family Doctor" should be. Active as he was during these later years in creating a sentiment for advanced standards, his every day life furnished just that standard—nothing less."

Dr. Alvord's life was one of service, and is emphasized by the ideals expressed in the following, his favorite poem, which was read at his funeral service at Battle Creek, March 27th:

THE HOUSE BY THE SIDE OF THE ROAD.

There are hermit souls that live withdrawn
In the peace of their self-content:
There are souls, like stars, that dwell apart,
In a fellowless firmament;
There are pioneer souls that blaze their paths
Where highways never ran;
But let me live by the side of the road
And be a friend to man.

Let me live in a house by the side of the road,
Where the race of men go by,
The men who are good and the men who are bad,
As good and as bad as I.
I would not sit in the scorner's seat,
Or hurl the cynic's' ban;
Let me live in a house by the side of the road
And be a friend to man.

I see from my house by the side of the road,
By the side of the highway of life,
The men who press with the ardor of hope,
The men who are faint with the strife,
But I turn not away from their smiles nor their fears,
Both parts of an infinite plan;
Let me live in my house by the side of the road
And be a friend to man.

I know there are brook-gladdened meadows ahead
And mountains of wearisome height;
That the road passes on through the long afternoon
And stretches away to the night.
But still I rejoice when the travelers rejoice,
And weep with the strangers that moan,
Nor live in my house by the side of the road
Like a man who dwells alone.

Let me live in my house by the side of the road
Where the race of men go by;
They are good, they are bad, they are weak, they are strong,
Wise, foolish—so am I.
Then why should I sit in the scorner's seat,
Or hurl the cynic's ban?
Let me live in my house by the side of the road
And be a friend to man.

—Sam Walter Foss.

Probably no greater tribute could be paid to our late associate than the eulogy which appeared in the Battle Creek Daily Journal on the day of his funeral:

"With expressions of sorrow and affection, tears and tokens of appreciation, our beloved friend Dr. Austin W. Alvord was quietly carried to the last resting place for mortal man today.

"In the memory of him we may say in unison, that he was a devoted and unselfish friend, a sympathetic and wise counselor and an honest worker.

"All through the years of toil and adversity he did no living soul a single act of unkindness, but carried his own cross and preached the everlasting reward of truth.

"Is not such a man mighty?

"Prayers and eulogy are small offerings; better let those who knew him, seek silent advice in the memory of a man who lived his life in the light of a true master, that his teachings might be spread to all men."

A thoughtful review of Dr. Alvord's ideals, life and accomplishments, cannot but inspire and stimulate those of us left behind to a higher and more effective effort to follow the admonition, "Go thou and do likewise."

Dr. Thos. M. Koon of Grand Rapids died in a private sanitarium in Minneapolis, April 10, 1915. Dr. Koon had been in ill health for about a year from a nephritic condition. Bronchial pneumonia developed and terminated fatally in three days.

By the death of Dr. Thomas M. Koon Grand Rapids loses an esteemed and public spirited citizen and the medical fraternity an able practitioner, whose skill in the treatment of diseases of children and contagious diseases was recognized throughout the state. The doctor was conspicuous in Grand Rapids by his keen interest and personal activity in public affairs, and his usefulness was recognized by appointments to positions of public trust and responsibility. Among these was his appointment as health officer by Mayor W. Millard Palmer in 1902, and at the close of his term was reappointed another term by Mayor Edwin F. Sweet, who recognized his value in dealing with the responsibilities of that office. It was during his last term that the health of Grand Rapids was threatened by an outbreak of smallpox that became a serious menace. Dr. Koon grappled with the situation, and it was due to his ability and foresight that the disease was checked. It was his knowledge of contagious diseases and their treatment that brought him into state-wide prominence.

When Chase S. Osborn was elected governor of Michigan he selected Dr. Koon as a member of the state board of health, and he held that important post until his death. At the time of his death he was vice president of the state board, a position which he had held a considerable time. It was due to his ability in organization and his extended medical knowledge and skill in handling contagious diseases that he became recognized as an authority on health and sanitation throughout the state.

In political faith Dr. Koon was an ardent and active Republican, and in the councils of that party he was prominent not only in Grand Rapids but among the party leaders of the state. He had served on both county and city Republican committees and at the last Republican national convention, when William H. Taft was nominated for president, he was appointed chief of the staff of physicians for the convention

WAS REGARDED HIGHLY.

Dr. Koon had practiced medicine in Grand Rapids, associated with his father, Dr. C. E. Koon, for sixteen years. The family moved here from Casnovia sixteen years ago. Before coming here the father and son practiced together, in all for a period of twenty years, both highly regarded among the medical fraternity. He was for some time a member of the medical staffs of the U. B. A. and Butterworth hospitals and on account of his ability in the treatment of diseases of children was made one of the staff of physicians of the Blodgett Children's Home.

Dr. Koon secured his early education in the public school of Casnovia, later attending the State Normal School at Ypsilanti. Leaving there he went to Chicago, where he acquired the full course in the Rush Medical College. Graduating from there he entered practice with his father, but returned later to Chicago and took a post graduate course. During 1907-1908 he spent nine months in Europe attending lectures on children's diseases in the great hospitals of London and other cities.

Dr. Koon was born in Bloomington, Ind., forty-five years ago, his family moving to Casnovia during his childhood. Four years ago he was married to Miss Harriet Campbell of Sault Ste. Marie.

Surviving are the widow, one son, three years old; father, C. E. Koon of this city, and William A. Koon, an attorney in Minneapolis.

He was a member of the Kent County and Michigan State Medical Societies and of the American Medical Association.

The funeral was held April 13 and was attended by a large number of the local profession as well as some from other parts of the state.

"The loved and loving brother, husband, father and friend died when manhood's morning almost touched noon and while the shadows still were falling toward the west."

"He had not passed on life's highway the stone that marks the highest point but being weary he lay down by the wayside, and, using his burden for a pillow, fell into that dreamless sleep that kisses down the eyelids still. While yet in love with life and raptured with the world, he passed to silence and pathetic dust."

Dr. Mason W. Gray, a prominent physician of Pontiac, died April 13th, 1915 at his residence, after a brief illness.

Dr. Gray was born July 23, 1855, on a farm in Troy township. He was graduated from the Michigan Agricultural College in 1877, and from the department of medicine of the University of Michigan in 1880, and the following year took a post-graduate course in medicine at the University of Pennsylvania.

Dr. Gray was a charter member and the first president of the Pontiac Medical Society, and one of the organizers of the Oakland County Medical Society. He was also a member of the Michigan State Medical Society, the American Medical Association, and the American Public Health Association.

Dr. Alexander H. Scott of St. Joseph, died at Brunswick, Ga. where for the past few years he spent the winter months. Death occurred March 22.

Dr. Scott was graduated from the University of Michigan in 1867. He was an active member of the Michigan State Medical Society and the A.M.A.

Dr. Enoch Emerson of Spring Arbor, died March 25, 1915 from a self inflicted pistol shot. No reason is known for the suicide.

Dr. Emerson was a successful physician at Spring Arbor, having practiced there for thirty-one years. He was graduated from the Detroit College of Medicine in 1886. He has been a member of the Jackson County Medical Society and the Michigan State Medical Society since the year 1905.

State News Notes

For scenic beauty the Sante Fe railroad is the desirable route to San Francisco. Special train service will be supplied for those desiring to attend the annual meeting of the A.M.A. in San Francisco in June. A schedule of this service will be found in our advertising page.

The chiropractors' bill seeking to secure a status for practitioners of this cult and to grant them a license, is announced to be officially killed and will not be reported out of the committee to which it was referred. In a subsequent issue we will review the work of our Legislative Committee.

For the purpose of starting a permanent fund to wage a systematic campaign against the spread of tuberculosis in Michigan, Dr. J. H. Kellogg of Battle Creek has given the State Board of Health, $1,000.00.

The American Section of the International Association of Medical Museums held its eighth stated meeting in St. Louis, Mo., on April 1. Dr. A. S. Warthin of Ann Arbor presided as Chairman.

Drs. A. P. Biddle, J. V. White, Jas. A. MacMillen, R. A. C. Wollenberg, Geo. C. Chene and Geo. J. Reberdy have removed their offices to Suite 938-945 David Whitney Building.

Dr. R. M. Gubbins has moved to Battle Creek, and has opened offices in the Post Building, while his residence is on Beach St. Dr. Gubbins is succeeded at Ceresco by Dr. L. E. Wescott.

Dr. A. T. Hafford of Albion, was married Tuesday, March 30th, at Battle Creek, to Miss Shurley Bruss. They will immediately commence housekeeping at Albion.

Thirty-five students of the Detroit College of Medicine and Surgery attended a clinic at the Michigan Home and Training School in Lapeer on April 16.

The examinations for license to practice medicine in Michigan will be held in Detroit, May 27-28-29 and in Ann Arbor June 8-9-10.

STOLEN: Ford Touring Car—1914 model; Dash number 363247; motor number 400633. Firestone tires; electric lights. H. S. Bartholomew, Lansing.

Dr. Harry A. Haze of Lansing has handed in his resignation as surgeon-general of the state artillery. Dr. Haze held this office for eight years.

The budget allowed the Board of Health of Detroit amounts to $756,885. Of this some $75,000 is allotted for the care of tuberculosis patients.

Dr. George L. Le Fevre of Muskegon has received the appointment of first lieutenant in the U. S. Reserve Medical Corp.

The Michigan State Nurses' Association and the Michigan State League of Nursing Education will hold a joint meeting in Ann Arbor, May 4-5-6.

Negaunee citizens have petitioned their council to appoint a full time health officer.

Dr. G. O. Switzer of Ludington has tendered his resignation as health officer of that city.

Dr. C. S. Gorsline of Battle Creek, is enjoying a vacation in Florida.

County Society News

CALHOUN COUNTY

Fourth regular meeting of the Calhoun County Medical Society was a joint meeting with the Southwestern Triological Association, and was held in the Commission Room of the City Hall, Battle Creek, Tuesday evening April 6th, at eight o'clock.

PROGRAM.

Clinic—By the Membership.
Address. Neuro-Retinitis,
Dr. A. E. Bulson, Jackson, Michigan
Address. Focal Infections,
Dr. Burton C. Corbus, Grand Rapids, Michigan.

GRAND TRAVERSE-LEELANAU COUNTY

The regular meeting of the Society was held on Tuesday evening, April 6, at Dr. Holdsworth's office.

Dr. J. M. Wilhelm acted as chairman.

A very interesting program was given. Dr. J. A. Hall read a paper on the "Abderhalden Reaction." Dr. A. S. Rowley read a paper on the "Harrison Law." Both papers were discussed.

W. D. MUELLER, Secretary.

MARQUETTE-ALGER COUNTY

Meeting of the Society was held March 17 at the City Hall, Marquette, Michigan. Paper was read on "Habitus Scrofulosus" by Dr. Henry Cunningham, Marquette. The paper exhibited much thought and care in preparation and great practical value. Discussion of the paper was general by the Society.

Instead of a paper, Dr. T. M. Cunningham spoke on the subject of "Acute Gastro Intestinal Infection Occurring in Marquette in the Winter Time." The subject was treated with special reference to its etiology. The subject was a live one because the same infection had occurred three years ago and again this year, not only here but in different communities in this region. An animated and general discussion followed. As a conclusion to this subject, motion was made that Dr. Main, full time health officer of Marquette, Michigan, be a committee of one to investigate the prevalence of this gastro-intestinal infection in communities above and below Marquette, and report at our next meeting.

The fee-schedule committee made a report. No action was taken on this matter by the Society.

H. T. CARRIEL, Secretary.

MUSKEGON COUNTY

At the annual meeting of the Muskegon County Medical Society the following officers were elected:

President—F. W. Garber.
Vice-Pres.—B. F. Black.
Secretary—J. T. Cramer.
Treasurer—L. N. Eames.
Delegate—V. A. Chapman.
Alternate—F. B. Marshall.
Director for 3 years—J. Oosting.
Director for 2 years—J. Vander Laan.
Director for 1 year —G. S. Williams.
Medico Legal Com.—F. B. Marshall.

Dr. Dodge of Big Rapids read a paper before the society Friday evening, Jan. 22, 1915 His topic was, "Personal Experience with Appendicitis."

J. T. CRAMER, Secretary.

OAKLAND COUNTY

The regular meeting of the Oakland County Medical Society was held on Thursday, April 1st, in the supervisor's room of the Oakland County Court House, Pontiac, at 2:30 p. m., President Miller presiding.

The minutes of the last meeting were read, and Dr. Fred T. Burt of Holly was elected a member of the Society.

Reports on Practice.

Presentation of Pathological and Anatomical Specimens.

Presentation of Patients.

"Illeus, Post Operative,"
R. C. Andries, Detroit.

"Surgical X-Ray,"
W. J. Cassity, Detroit.

Dr. R. C. Andries of Detroit read a very interesting and instructive paper on "Post-operative Ileus." This paper was one which promoted considerable discussion because of its originality. Dr. Andries has spent a great deal of labor and time in bringing

about mechanical ileus in animals. He gave a very detailed and complete history of its production and outcome on various animals which was most interesting.

JAMES J. MURPHY, Secretary.

ST. CLAIR COUNTY

The St. Clair County Medical Society held their regular semi-monthly meeting at the Elks Club Thursday evening, April 1, 1915.

Dr. Daniel LaFerte of Detroit gave a very interesting talk on fractures.

Supper was served to about every member of the Society and an enjoyable time was reported by all.

R. K. WHEELER, Secretary.

KALAMAZOO ACADEMY OF MEDICINE

Wednesday, April 14, 1915, 1:30 p. m. Academy of Medicine rooms, Public Library building.

Luncheon at The Park-American at 12 noon.

1. Report of a Case of Intra-Urethral Chancre.
   Dr. Arthur E. West, Kalamazoo.

Discussion opened by Drs. J. W. Bosman and P. T. Butler.

2. The Danger of Relaxation of Vigilance in the Unconditional Discharge of any "Cured" Typhoid Case—A Specific Illustration.
   W. A. Perkins, Kalamazoo.

Discussion opened by Drs. D. J. Scholton and J. B. Jackson.

3. Salient Points in the Differential Diagnosis of Carcinoma, Tuberculosis, and Syphilis of the Larynx.
   Dr. Joseph C. Beck, Chicago, Ill.

Discussion opened by Drs. E. P. Wilbur, F. E. Grant, E. J. Bernstein and E. D. Brooks.

WAYNE COUNTY

Monday, March 29—General meeting.

Dr. Pantzner was unable to read his paper before the Society. Dr. A. B. Graham and Dr. F. R. Carlton, also of Indianapolis, were in the city in a receptive mood and they consented to address the members. Dr. Graham talked upon the newer methods of general anesthesia and Dr. Carlton gave his experience in prostatic surgery. Their remarks were greatly appreciated.

Monday, April 5—General meeting.

Diagnosis and Treatment of the Surgical Diseases of the Biliary Tract,
Dr. C. D. Brooks

Discussion opened by Drs. George Potter, Ray Andries, A. W. Blain.

Jaundice from the Internists' Standpoint,
Dr. Geo. E. McKean.

Discussion opened by Drs. W. N. Donald, E. W. Haas.

Monday, April 12—Medical Section.

Psychoneurosis,
Dr. Augustus W. Ives.

Discussions opened by Drs. Wesley Taylor, David R. Clark, I. L. Polozker.

Monday, April 19—General meeting.

Joint meeting of the Wayne County Medical Society, guests of The Detroit Branch of the A. Ph. Ass'n. and The Detroit Retail Druggists Ass'n.

Five minutes talks from,
R. H. Bodimer, Pres. D. R. D. Ass'n.
W. A. Hall, Pres. Detroit Branch, A. Ph. A.
Dr. Don M. Campbell, Pres. Detroit W. C. M. S.

Address by Victor C. Vaughan, University of Michigan.

The Poisonous Group in the Protein Molecule.

Discussion opened by E M. Houghton, A. P. Ohlmacher and C. Hollister Judd.

Dr. Vaughan gave an account of some of his wonderful discoveries in connection with the poisonous compounds, which he has separated from some of the most common vegetables and animal proteins, such as the proteins of wheat, hemp seed, white of egg and casein of milk. Dr. Vaughan has been engaged in this study for fifteen years and is an authority on the subject.

Monday, April 26—Surgical Section.

Symposium.

Some Interesting Phases of the Problem of Surical Service in Hospitals.

1. Organization of a Surgical Service.
   Dr. Wayne Smith.
2. Standardization of Surgical Technic.
   Dr. W. L. Babcock.
3. A Study of the End Results of Surgical Treatment in Hospitals.
   Dr. John N. E. Brown.

Discussion opened by Drs. W. F. Metcalf, Angus McLean, Frederick C. Kidner.

Citarin.—Citarin was admitted to New and Nonofficial Remedies in 1906. The Council on Pharmacy and Chemistry held that experiences had failed to demonstrate the value of Citarin as a uric acid solvent and hence directed the omission of it from New and Nonofficial Remedies (*Jour. A. M. A.*, Feb. 20, 1915, p. 685).

Book Reviews

A PRACTICAL TREATISE ON DISEASES OF THE SKIN. By Oliver S. Ormsby, M.D., Professor of Skin and Venereal Diseases in the Rush Medical College, Chicago. Octavo, 1168 pages, with 303 engravings and 39 plates in colors and monochrome. Cloth, $6.00, net. Lea & Febiger, Publishers, Philadelphia and New York.

Dr. Ormsby's recognition as one of the world's foremost dermatologists gives to this work the stamp of high authority. He has brought to the task of preparing a complete consideration of present-day dermatology, with its broadly divergent aspects, peculiar qualifications resulting from thorough study and broad observation, and has not failed to profit by his long association with the late Drs. J. Nevins Hyde and Frank Hugh Montgomery. The appearance of his work at this time is particularly opportune, resulting in a careful, up-to-date, and final review and co-ordination of the numerous and important additions to the knowledge of this subject recently reported from various parts of the world.

The volume is concise but its descriptions of cutaneous conditions are sufficiently detailed to be of real value to practitioner, specialist or student. Many new diseases have recently been differentiated, and new facts discovered concerning the nature and course of previously known diseases. All these findings are taken up and harmoniously developed in the author's finished consideration of the subject.

The striking results of recent research in the etiology and pathology of cutaneous diseases are assigned their proper places, and the newer methods of diagnosis are presented at length. The literature of the subject has been thoroughly reviewed and the author has not overlooked the rich fund of valuable material in the treatise of his distinguished colleague, Dr. Hyde. His quotations from the opinions of leading dermatologists, with references, afford the conscientious student a useful starting point for his further investigations.

The consideration of treatment is well developed, and the directions are most explicit. His therapeutic recommendations are clear and positive, and include not only the standard treatments, but the special methods which have been so extensively developed during the past few years.

The superb series of illustrations and plates includes some from the standard treatise of Dr. Hyde, and a very large number from new and original photographs in the author's own collection and in those of his colleagues in recent dermatological research.

Its authoritative statement, clear explanations and concise diction make this volume peculiarly adapted to students' use. For the specialist it offers a complete summing up of present-day knowledge and practice in this rapidly developing field. For the practitioner its usefulness is established by its availability both as a reference book and working manual and by the emphasis placed on diagnostic factors and on treatment.

THE TUBERCULOSIS NURSE. HER FUNCTIONS AND HER QUALIFICATIONS. A handbook for Practical workers in the tuberculosis campaign. Ellen N. LaMotte, R.N. With introduction by Louise Hamman, M.D. Cloth, 292 pages. Price $1.50. G. P. Putnam's Sons, New York.

This book will be of great usefulness to the nurse and others engaged in the matters considered in the text. It is interesting, valuable and worthy a position in any library.

SURGERY OF THE BLOOD VESSELS. By J. Shelton Horsley, M.D., F.A.C.S. Surgeon in charge St. Elizabeth's Hospital, Richmond, Va, 300 pp., cloth. Price $4.00. C. V. Mosby Company, St. Louis, Mo.

This is a satisfactory monograph that deals with the various phases of blood vessel surgery, and its recent developments. It clearly sets forth the author's personal experiences and the methods he employs.

It may safely be said that he who reads this book will be immensely benefited by the author's experiences and thereby enabled to approach the actual work of blood vessel surgery, which is so important today, with definite guiding principles. This is a most timely volume and merits a cordial reception.

INFECTION OF IMMUNITY. A Text-book of Immunology and Serology. For Students and Practitioners. By Charles E. Simon, B.A., M.D, Professor of Clinical Pathology and Experimental Medicine, College of Physicians and Surgeons, Baltimore; Pathologist to the Union Protestant Infirmary, the Women's Hospital of Maryland and the Mercy Hospital, Baltimore. Third, Edition, enlarged and thoroughly revised. Octavo, 351 pages, illustrated. Cloth, $3.25 net. Lea & Febiger, Publishers, Philadelphia and New York, 1915.

The rapid and extensive advances of science in this field have made the revision of this work no perfunctory task, although less than two years have elapsed since the appearance of the second edition. Every line has been subjected to careful scrutiny and brought into complete accord with the latest information. Entire sections have been added and a vast amount of new material incorporated. Resultantly the new Infection and Immunity embodies

every advance in this vitally important department of medical activity, with illuminating comment which renders the material presented of easy comprehension by the student and immediately available for the use of the practitioner.

In its previous editions Simon's work gave to the profession a clear, practical, and peculiarly useful presentation of all that experimental medicine has accomplished in this field. These characteristics are retained, while the changes and additions made by the author in the preparation of the new third edition exactly measure the progress of the sciences of immunology and serology.

Dr. Simon has, in one compact volume of high didactic quality, opened up for student or practitioner the whole subject of infection and immunity. Moreover he deals with a profoundly involved subject in terms that are readily grasped. Its terminology is assimilated without conscious effort by the reader.

The author has not failed to note and comment upon every addition to our knowledge of this subject. The consideration of anaphylaxis; active and passive immunization; auto and normal serum therapy; ferment and allergic reactions; the chemotherapy of the pneumococcus and of cancer and the serum diagnosis of pregnancy have been notably developed.

The recent advances in the study of Abderhalden's protective ferments and the associated technic are exhaustively presented. The section on the Wassermann reaction has been entirely rewritten. Detailed consideration is accorded methods of minimizing the danger from anaphylactic shock during serum treatment. The author carefully reviews the observations of Schick on the recognition through allergic skin reactions of individuals whose blood normally contains diphtheria antitoxin in quantities sufficient for protection. The possibilities of better results in the serum treatment of tetanus through an improved technic is dwelt upon and the potentialities of vaccine treatment in Hodgkin's disease are suggested. Minute attention is given immunity in various diseases; to the preparation of autogenous and other vaccines; to methods of immunization, and to the technic of immunization tests.

The plates are perfect in color and conformation and are selected and placed with discrimination. The author's delightful style and successful avoidance of obscure technicalities adds to the interest of a fascinating study.

Simon's work offers the student a condensed yet adequately complete manual, in a subject whose lit erature is voluminous, with full attention to laboratory technic. It is, moreover, a safe guide in more extended investigations. To the practitioner it affords that grasp of principles and methods which will enable him fully to avail himself of the aids that the modern laboratory places at his disposal in the diagnosis, control and treatment of disease.

Miscellany

Waterbury's Compound.—Four years ago the Council on Pharmacy and Chemistry reported unfavorably on "Waterbury's Cod Liver Oil Compound." Having been requested to consider again the product, now known as "Waterbury's Compound," the Council found that there was no evidence that it is a substitute for cod liver oil. It held that Waterbury's Compound is advertised with misleading claims and therefore voted that no further consideration be given to it (*Jour. A.M.A.*, Mar. 20, 1915, p. 1016).

Sanmetto.—The Council on Pharmacy and Chemistry finds that Sanmetto is a secret nostrum the exploitation of which is an invitation to haphazard, uncritical therapy and a menace to public health. It is claimed that "Sanmetto is a blending of true santal and saw palmetto with soothing demulcents in a pleasant aromatic vehicle," but neither the identity of the "demulcents" nor the quantities of the other ingredients are given. The recommendations for the use of Sanmetto are unwarranted, absurd and vicious. The advertising claims are likely to induce some physicians to belittle the importance of diseases of the sexual organs and to be content with the prescribing of Sanmetto to the detriment of the patient and the danger of the community (*Jour. A.M.A.*, Mar. 13, 1915, p. 926).

Guertin's Nerve Syrup.—This is an epilepsy treatment sold by the Kalmus Chemical Co., Cincinatti, Ohio. Examination in the A. M. A. Chemical Laboratory demonstrated Guertin's Nerve Syrup to be essentially a mixture of several bromides, the bromide content being equivalent to 13.9 grains potassium bromide per fluidram. The recommended daily dose of 4 to 8 teaspoonfuls is equivalent to 55.6 to 111.2 grains potassium bromide. While possessing all the potency for harm that resides in secret mixtures of the bromides, the purchaser of this nostrum is led to believe that it is harmless (*Jour. A.M.A.*, Mar. 27, 1915, p. 1094).

Budwell's Emulsion.—Budwell's Emulsion No. 1 is stated to contain cod liver oil, "Iodide of Arsenic," "Iodide of Calcium" and "Iodide of Manganese." Budwell's Emulsion No. 2 is claimed to contain the ingredients of the first and also creosote carbonate and guaiacol. The Council on Pharmacy and Chemistry refused recognition to these preparations because the exploitation made likely their use as "consumption cures" and because they are irrational shot-gun mixtures (*Jour. A. M. A.*, Feb. 20, 1915, p. 684).